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LAKE CARRIERS' ASSOCIATION.

To consider and take action upon all general questions relating to the navigation and carrying business of the Great Lakes, maintain necessary shipping offices and in general to protect the common interests of Lake Carriers, and to improve the character of the service rendered to the public.

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under the Government, considering the serious and exacting nature of their duties and the extent of their fiscal responsibilities. Their salaries range from \$1,500 to \$1,800 per annum, and they are required to furnish bonds ranging from \$10,000 to \$50,000 in amount. Their present salaries were fixed as long ago as 1882, since which time the service has been largely extended, the number of stations in all districts having been increased—in some instances 100 per cent. or more, and in others 50 per cent. Their fiscal responsibilities have been correspondingly enlarged, and their multifarious duties increased to such an extent that at the present time several of them are obliged to employ clerical assistance at their own expense.

The General Superintendent recommends that the compensation of each district superintendent be advanced to \$2,500 per annum, which he regards as less than is paid to any officers of the Government holding correspondingly responsible positions. On different occasions bills have been passed by both houses of Congress substantially proposing the increase requested, but they have failed to be enacted into law.

THE METRIC SYSTEM.

The following is from the report of United States Consul-General Skinner, of Marseilles, France:

"An incident occurred during the year which is worth noting, as illustrating the desirability of the adoption of the metric system in the United States, which, except Great Britain, is the only important manufacturing nation still employing the old system. In August of last year the United States naval collier Scindia arrived at this port, with boiler tubes burnt out, and under urgent orders to proceed to Manila. The ship came to Marseilles, as it was considered, and in fact was, the port best equipped to make the absolutely essential repairs. Every facility was offered for the prompt refitting of the boilers by local contractors, but it was found that all the tubing in the city had been manufactured in France, and according to metric dimensions, and none of it could be utilized in the Scindia's boilers without forcing the shells. There was the variation of a hair's breadth in the dimensions, but it was sufficient to prevent the work from being accomplished, and orders had to be cabled to the United States for material, which was brought over on one of the German steamers—probably at express rates—and delivered at Naples, where the repairs were eventually carried out. The ship was delayed two or three weeks, in consequence of the fact that her boilers had been built upon a scale of feet and inches, while European tubing was manufactured according to metric system."

BRIDGE ACROSS THE STRAITS OF CANSO.

It is announced that a company has been formed for the purpose of building a bridge across the Straits of Canso. In the Canadian Royal Gazette will appear an application to the Dominion government to grant a charter to the Strait of Canso Bridge Company, Limited.

The application is signed by Ross & Ross, Sydney, solicitors, on behalf of the applicants, and the object of the proposed company is to construct a railway, tramway, vehicle and passenger suspension bridge across the Strait of Canso, from a point at or near Port Hastings, to a point at or near Cape Porcupine, and to build lines of railway to connect the proposed suspension bridge with through lines.

The construction of a bridge across the strait would probably have an important bearing on the proposed fast Atlantic line and would be greatly in the interest, from the fast Atlantic line standpoint, of the whole of Canada.

The advantages to the coal and iron enterprises of Cape Breton, which would require transportation facilities for their products to the west could not well be estimated.

The proposed bridge, when completed, will be one of the highest in the world and will have a span of at least 1,000 feet.

The quantity of steel entering into the construction of the bridge will be approximately 350,000 tons, and it is estimated that the structure and approaches will cost in the vicinity of \$4,000,000. The possibility of a bridge across the strait has been demonstrated by expert engineers who have assured absolute safety of transfer. The approaches to the proposed bridge will be reached by deflection of the I. C. R. on both sides of the strait and the high grade going out of Mulgrave will be overcome.

A NATIONAL NAVAL RESERVE.

Aaron Vanderbilt, chairman of the New York Board of Trade Committee on Naval Reserve, is taking active interest in the organization of this important service. Mr. Vanderbilt recently wrote to President Roosevelt on the subject and is assured of the support of the administration as indicated by the recommendations in Secretary Long's report. In an interview, Mr. Vanderbilt says:

"The naval reserve force of the United States was originally intended to have been composed of three branches: First, the navigating naval reserve, to be composed of officers and men of the merchant marine; second, naval militia of the States; and third, auxiliary ships of the United States Navy, to be composed of the fast-going ships of the merchant marine of the United States. The two branches already established are: First, the naval militia of the States, of which there are now 6,000 officers and men, whose efficiency has been demonstrated in the Spanish war, and second, the fast steamers of the merchant marine through the Mail Subvention Act constituting an auxiliary navy in the event of war. The latter, likewise, demonstrated their efficiency in the Spanish-American war in the form of the scout ships of the American Line and cruisers of other lines, notably the Ward. While at the beginning of the efforts to establish this service there was not a single unit of this service in the country, there are now some twenty different States on the seaboard and interior lake coast and rivers who have now regularly organized militia in active service.

"The navigating naval reserves, composed of the ocean-going officers and men of the merchant marine, it is now sought to complete and thus round out the full service so desired for offense and defense in the event of war and strengthening the regular naval forces of the battleships and other vessels of war. At present we have a large number of men in the merchant marine who are seagoing officers and men, but they are, so far as defensive and offensive purposes of the United States are concerned, not crystallized for military service. This will organize and keep them in touch with and under the discipline of the United States navy, they giving for a limited stated period during each year a stated service for receiving instruction and drill at naval stations or on board vessels of the United States navy. In this branch of the service which we seek to establish we are simply behind other great maritime powers of the world. Other nations have their naval reserves, composed of the ocean-going element of their merchant marine. And all of their great ships to-day are more or less officered and commanded and manned by naval reserve forces. This service tends to stimulate the ambition of American boys for entering the merchant marine service. It has the tendency to elevate the service in that those on the ships commissioned by the United States navy are entitled to wear the uniform and be considered a regular part of the navy of the United States. Their records and movements are kept, so that it really tends to elevate the merchant marine personnel of the country."

THE NEW FREIGHT STEAMER HUGOMA.

The new steel steamer Hugoma, which arrived at Norfolk on Nov. 23, from Detroit, Mich., is a typical freight steamer. She was built at Detroit, by the Detroit Ship Building Co., for the Hugoma S. S. Co., of Rochester, N. Y. She is of the improved type of freighters, being fitted with all the modern improvements for the rapid handling of cargo, and the engines and boilers are carried amidships. The principal dimensions of the steamer are: Length between perpendiculars, 250 feet; breadth, moulded, 40 feet; depth of hold, moulded, 26 feet 5 inches, and her draft, loaded, on Lloyds water line, is 21 feet 9 inches. The engines are of the triple expansion type, the diameter of the cylinders being 18, 29 and 48 inches, with 36 inches stroke of piston. Steam is supplied by two boilers, 11 feet 6 inches square each, allowed a working pressure of 165 lbs. The speed is 9 to 10 knots, on a consumption of 12 to 15 tons of coal per day. The vessel was built under Lloyd's survey, and is classed 100 A1 under that association's rules, and A1, 20 years, by the American Bureau of Shipping. She will carry about 3,300 tons dead weight, having 153,588 cubic feet of cargo space. The hold is pilastered for grain trimming or shafting boards. H. T. Morley, of Detroit, Mich., is her managing owner, and Scemmel Bros. are her agents at New York.—New York Maritime Register.

The crews saved, or assisted to save, 422 vessels, valued, with their cargoes, at \$3,139,610, and rendered assistance of minor importance to 548 other vessels in distress, besides warning from danger 231 vessels. The circumstances show that many of the vessels which received warning were large. It is difficult to estimate their value, but it cannot be less than \$2,000,000, and the number of lives in danger not less than 2,000.

The cost of the maintenance of the service was \$1,640,013.74.

The General Superintendent again urgently calls attention to the inadequate compensation of district superintendents, whom he believes to be the poorest paid officers



CHICAGO.

Special Correspondence to The Marine Record.

The season closed this week with two cents offered on corn, and only two or three charters placed, as owners held for $2\frac{1}{2}$ cents. Underwriters will not cover hulls, freight or cargo, after Thursday.

The Northern Michigan line steamer City of Charlevoix is being laid up at Manistee. The steamer Aztec and barge Mitze are in winter quarters at Toledo, and the schooner Davis is laid up at Muskegon.

The Hoisting & Conveying Machine Co., Chicago, Ill., has been incorporated, capital \$20,000, for manufacturing hoisting and other machinery; incorporators, Charles H. Notter, Charles Berghoefer, Mary A. Notter.

The Menominee River Lumber Co. has closed their mill at Marinette after half a century of work, during which time it has cut over 100,000,000 feet of lumber. Captain Jesse Spalding, of this city, operated the mill.

A car ferry for the Pere Marquette Railway Co. and a 376-ft cargo steamer have been placed with the American Ship Building Co. this week, making 34 vessels this company has under contract for 1902, or seven to eight months work.

According to instructions the Big Pt. Sable life-saving station will close for the season on Nov. 30, and the Ludington station will close Thursday, Dec. 5. The crews at the Jackson Park and Evanston stations have completed their season's work.

The report of the life-saving service for 1901 shows 17 lives lost during the past year. The number of vessels totally lost was 43. The life-saving crews saved or assisted to save 22 vessels, valued with their cargoes at \$3,139,010. The cost of the maintenance of the service was \$1,040,013.

Those close to Senator McMillan say that he recognizes that there should be a bridge at Detroit, but that nothing can be done until the railroads centering at that point, get together and decide on a location. Until the railroads do this no bill will be introduced, and for the present vessel owners have nothing to oppose.

During November the marine postoffice delivered 31,855 pieces of mail and received from passing boats 9,250 pieces. During the month forty-six money orders amounting to \$1,052.20 were issued. There were 2,405 passages during the month. It is expected that the postoffice will be closed for the winter about December 15.

The Edward Hines Lumber Co. has purchased the yards and stock of the Arthur Gourley Company, adjoining its plant, and now has the largest lumber yard in the world. The yards now have a river frontage of 9,000 feet and a capacity for handling annually 400,000,000 feet of lumber. The consideration for the transfer was between \$300,000 and \$400,000.

After eight months' work the Starke Dredge Company has completed its government contract at St. Joseph and laid the outfit up. That port now has the deepest waterway and best harbor on the east shore. There is twenty feet of water from the end of the piers up to and through the St. Joseph canal, a distance of half a mile. The deepest draught vessel on the lakes can dock in the harbor.

The Detroit & Cleveland Navigation Co. has about completed the plans for the new docks and warehouses at Detroit, which will be necessary in order to accommodate the traffic of the new Detroit & Buffalo line which will begin its service next June. New freight houses, docks, passenger landings, and a pavilion extending up to the White Star line dock will be built, and there will be two approaches to the landings one at the foot of Wayne street and the other at the foot of Shelby street.

The naval training ships are the Alert, Buffalo, Dixie, Cincinnati, Alliance, Amphitrite, Indiana, Mohican, Lancaster, Essex, Hartford, Pensacola, Monongahela, Topeka and Prairie.

BUFFALO.

Special Correspondence to The Marine Record.

The steamer Algona is in winter quarters at Ogdensburg. Heavy repairs will be made on her this winter.

A search has been made for the boulder which the steamer Chicago struck off this port on her last trip, but so far it has not been located.

The Ross Valve Co., Troy, N. Y., received a medal at the Exposition and the Ross water engine received the only award granted at the Pan-Am.

The steamer Mark Hopkins is ashore above Long Point and is neaped several feet in a soft sandy bottom. Attempts to release her proved ineffectual, but every possible effort will be made to bring her in here before navigation closes.

Judge Hazel has issued an order directing that all persons having claims against the steamer Northern Queen file their claims against the bond of \$121,813.11, which is held by the court, instead of against the steamer. The proceedings are the outcome of the sinking of the steamer Sagamore by the Northern Queen.

From \$20,000 to \$100 is quite a drop, yet the latter figure is the sum at which a claim for \$20,000 was settled this week. John McNerney libeled the steamer W. B. Morley for \$20,000. McNerney alleged that he had sustained personal injuries while in discharge of his duties aboard the Morley. The claim was settled for \$100 rather than let it come to trial.

The following meteorological observations are furnished by the office of the United States Weather Bureau, Buffalo, for the week ending December 4, 1901: Prevailing wind directions during the week southwest; highest velocity, 42 miles southwest on November 29th. Mean temperature for the week, 31 degrees; highest temperature 51 degrees on December 1; lowest, 14 on December 4, 1901.

Captain Alexander Walter, manager of the Great Lakes Towing Co., is seriously ill. Captain Walter was taken down with appendicitis a number of days ago and was removed to one of the hospitals. He held out so well that few thought his ailment would be fatal, but his case is now a fighting chance. He has been in the tug business in Buffalo many years and is a capable and popular tug man.

The Western Transit Co. is sending out a special searching party to look for wreckage and any more bodies that may be found from the lost steamer Hudson. The beach will be patrolled to Huron Bay, and thence around the Point to Pequaming, a distance of 130 miles. The country to be traveled through is a veritable wilderness, with only a few club houses scattered around, and it is expected that the trip will take at least two weeks.

The Chicago House Wrecking Co., of Chicago, has purchased the buildings of the Pan-American Exposition at Buffalo, N. Y., for \$132,000. The demolition of the buildings will be begun at once. The erection of the buildings cost no less than \$8,000,000. There are 33,000,000 feet of lumber in the buildings, 2,000,000 pounds of pipe, 200,000 incandescent lights, 20,000 flag poles and 30,000 flags. This company purchased the buildings of the World's Fair at Chicago and dismantled them.

Collector Williams, of Tonawanda, made public his report for the season of navigation that closed on Saturday night. It shows that 205,838,854 feet of lumber left the Tonawandas via the Erie Canal since navigation opened on the 5th of last May. This is over 50,000,000 feet more than was forwarded during 1900. It is also the largest quantity of lumber shipped from the Tonawandas since 1897, during the season of which a trifle over 218,000,000 feet was forwarded. The largest season in the history of the port was 1884, when 384,445,535 feet were shipped. Pig iron shipments for 1901 amounted to 31,340,332 pounds as against 34,790,540 pounds for 1900.

The Western Transit Co. received the following wire this week from their Houghton agent, J. C. Thompson: "A body was found at Traverse Bay yesterday. It is that of a large man fully six feet, weighing about 190 pounds, cannot be identified by any features of face or head, owing to the very bad condition of same. Had gold watch in pocket, No. 26090, also some papers giving course from the Soo to Duluth, but nothing to indicate the name. Wore dark woolen pants and vest of diagonal material. Feet and hands large. Society button on lapel of coat with letters 'L. S. U. A.' on edge and center monogram made up of letters 'L. S. U.' also bunch of keys found in pocket." It is thought that the body might be one of the crew of the lost steamer Hudson.

The medals of award of the Pan-American Exposition at Buffalo are of three classes—gold, silver, and bronze—all of the same dimensions, $2\frac{1}{2}$ inches in diameter. The obverse shows a group typifying the dominion of intellect over force. A youthful female figure represents intellect and the buffalo is the symbol of physical power. Festoons of oak leaves encircle the two figures. The reverse of the medal shows the North American Indian passing the pipe of peace to the Southern native. Both Indians have laid aside their weapons and are engaged in friendly conversation. The designer, Mr. Herman Atkins MacNeil, of New York City, aimed to produce a design that was typically American, and which should be suggestive of no other section of the globe. The successful exhibitors will shortly receive their awards in the shape of one of the three medals.

Capt. M. M. Drake says that a new bridge somewhat of the type of the Michigan street bridge over the creek is badly needed to replace the present dangerous structure over the Blackwell, and if the dredging of the harbor follows the replacing of the bridge, it should give Buffalo her rightful place in the list of lake ports, which she bids fair to lose if present conditions are not changed. This year the grain receipts were 25,000,000 bushels short of last year's receipts, and last year's were short about 30,000,000 bushels of the year before. While all this shortage is not directly due to low water and the difficulty experienced by big boats in getting around the harbor, the poor facilities afforded is one of the prime causes and it clearly indicates that unless something is done we will lose a great deal more of the business that formerly came this way. Buffalo harbor could easily be made one of the best on the lakes if proper attention were given to the matter and a little dredging work done when needed.

Captain W. E. Clark, this season superintendent of the Northwestern Steamship Co., of Chicago, having severed his connection with the company, said in an interview this week: "The four steamers that were operated during the summer between Chicago and European ports are now on the coast, and it is extremely doubtful if they ever return to the lakes, certainly not to engage in the trade with Europe. If that was tried again it would not be long before the men who tried it would blow in their pile, no matter how large it was. No marine man familiar with the business, ever thought the venture would prove a paying one. The high insurance rate was not the only trouble. The delays and the dangers of the Chicago-Montreal run was a most important item, and then it is impossible for boats of that size to compete with the large foreign steamers on the run between Montreal and European ports. The foreign vessels are built, first, at nearly thirty per cent. less cost than American vessels, and then the crews are paid nearly fifty per cent. less than the sailors on the lakes. The route is an international one, and when you see that foreign vessels do not engage in the trade, you can count that there is no money in it."

NOTICE TO MARINERS.

UNITED STATES OF AMERICA—NORTHERN LAKES AND RIVERS—MICHIGAN.

TREASURY DEPARTMENT,
OFFICE OF THE LIGHT-HOUSE BOARD,
WASHINGTON, D. C., November 30, 1901.

SOUTH FOX ISLAND LIGHT STATION.—Notice is hereby given that, on or about December 13, 1901, the light and fog signal on the southerly extremity of South Fox Island, northeasterly part of Lake Michigan, will be discontinued for the winter of 1901-1902.

By order of the Light-House Board:

N. H. FARQUHAR,
Rear-Admiral, U. S. Navy, Chairman.

The advantage that the shippers of grain from Boston enjoy over those who ship from New York have been brought to the attention of Governor Odell by the local grain interests, says the Journal of Commerce. They say that as a result of contracts between the railroads terminating at Boston and the steamship lines between Liverpool and Boston the latter port has this year secured an immense advantage. In figures this advantage is indicated by a total of over 10,000,000 bushels of wheat shipped to Liverpool from Boston, as against some 3,400,000 bushels from New York to Liverpool. It is asserted that the railroads offer free storage at Boston.

DULUTH-SUPERIOR.

Special Correspondence to The Marine Record:

The Onoko will winter at Port Arthur, also the steamer Myles.

On present loading 5 cents has been offered for spring delivery at Chicago.

Ice is making fast and Portage Lake is closed for the season. The weather has been very cold all week and shipments are over.

S. J. Cusson, of the Edward Hines Lumber Co., Chicago, says that his firm will deliver 75,000,000 feet of lumber next season; 50,000,000 feet will be shipped during the winter.

The steamer W. L. Brown, Captain Massey, chartered by the Canada-Atlantic Line, has put in a most successful season. Chief Engineer John Goalding is to be credited with his full share of the results.

The head of the lakes Duluth, Two Harbors and Superior, will show a total of ore shipments for the season of 10,635,000 tons, in round numbers, as compared with 9,465,355 tons in 1900, or a net increase of about 1,170,000 tons.

The Lake Michigan & Lake Superior Transit Co., owners of the Peerless, brought suit against the towing company for \$20,000, but the United States District Court held that the tugs were not responsible, and it is that decision which the Court of Appeals has affirmed.

The Iron Bay plant at West Duluth, Minn., will again be operated. A. C. Weddell and Frank Borren, with a number of other West Duluth citizens, have leased the plant and will place it in operation shortly. The Duluth Foundry & Machine Co. was the last corporation to operate the plant and its lease expired last summer.

Many boats are to lie up in winter quarters at the head of the lakes this year. The number will be greater than ever before. It is estimated that the financial advantage to the head of the lakes as a result of boats wintering here will average \$500 a boat for expenditures of all kinds by the time they go in service again.

The steel steamer Coralia has been changing masters all season, and now Captain S. W. Stanton leaves her on account of injuries received through a fall last Monday while on board the vessel. Captain Stanton will remain in hospital for a few days and the Coralia will proceed under charge of her sixth master for the season.

The land on Wisconsin Point which the United States government has been after for some time has been acquired by the government. There is a tract of about forty acres on Wisconsin Point, Nemadji Point and Grassy Point which has been secured and which will be cut out in making the improvements to the natural entry. There will be a government reservation in connection with the improvement.

Now that the season has closed it is just as well to notice that the Pittsburg Steamship Co., has, as was expected, ruled the iron ore freight market, owing to the immense tonnage which they handle. What is generally termed outside shipowners, who chartered to the big firm, have been rather disappointed, owing to the detention experienced at discharging ports throughout the season, and, this has been a constant loss, chiefly owing to the desire to load into cars direct to the furnace instead of discharging on the docks at Ohio ports.

The United States Court of Appeals has handed down a decision in the Peerless-Stewart collision case, and the decision of the United States District Court, sitting in Duluth, is affirmed. The steamer Peerless was being towed up St Louis Bay, and the steamer Stewart was coming down. Each of the boats was being towed by tugs of the Duluth Towing & Wrecking Co., and they met near the draw in the Northern Pacific bridge. The tug Mystic was also at the draw and in the mix-up the Stewart collided with the Peerless and the latter was sunk in shallow water.

It is not thought that the big steel barge Smeaton, fast on a rocky beach near Au Train on the south shore, will be released. Captain Reid's plan of pumping air into the hold of the vessel and forcing the water out, thus floating the ship, may work, but it is considered that it will be too late to try the scheme this season, and that the boat will go to pieces in the winter storms. The Smeaton, which is estimated to be worth \$180,000, is exposed to northerly gales. It is stated that Capt. James Reid, the contracting salvor, is to receive 40 per cent. of the estimated value of the craft when floated and placed at a port of repairs.

It is learned from Captain D. D. Guillard's report to the Chief of Engineers, Corps of Engineers, U. S. A., that the

operating and care of waterways across Keweenaw Point from Keweenaw Bay to Lake Superior, during the fiscal year ending June 30, 1901, cost \$8,300 from the permanent-indefinite appropriation of July 5, 1884, and the sum was expended in maintaining by dredging a practicable 20-foot of the canals, and in guarding against encroachments on the legally established harbor lines, and an allotment of \$8,500 from the same source for the same purpose has been made for the fiscal year ending June 30, 1902.

A case decided by the Supreme Court of this state was filed by Justice Collins in St. Paul a few days ago. It was that of the Butler-Ryan Co. respondent, vs. E. T. Williams & Sons, appellants. The Butler-Ryan Co. was engaged in some work on the north pier of the Duluth canal, and had clusters of guard piling driven as protection. The defendants were government dredging contractors, operating a line of tugs through the canal between the south pier and the piling on the other side of the canal. A steam barge, the Grover, and the tug Martin met in the canal, and it is claimed that a scow towed by the Martin was improperly managed, and sheered from side to side, so that in trying to avoid a collision with it the Grover was compelled to run into the guard piling on one side, tearing a good deal of it down. The St. Louis County Court ordered judgment for the Butler-Ryan Co. against Williams & Sons, owners of the tug Martin, and the order is affirmed.

CLEVELAND.

Special Correspondence to The Marine Record.

One of the last charters was 70 cents on ore from Escanaba.

The rate on coal to Milwaukee is still at 70 cents with not too brisk chartering.

The firm of C. Gilchrist & Co. is placing tonnage in winter quarters as discharged.

The steamer John Harper of the Gilchrist fleet, the Captain Thomas Wilson, the W. D. Rees and the Andrew Carnegie, have been placed in winter quarters.

Mr. W. H. Becker and Captain Richard Neville left for Marquette on Wednesday. They will come down on the steamer George W. Roby, which will sail from that port Sunday.

Major W. L. Fiske, Corps of Engineers, U. S. A., announces that a new chart, in colors, of Lake Erie has been issued and is now on sale at the United States Lake Survey Office, Campau building, at 15 cents a copy.

It is now known that the lake shipments of iron ore will exceed 20,000,000 tons, although full returns are not yet compiled. The new mines at Michipicoten contributed about 110,000 tons besides another 65,000 tons going to Canadian furnaces.

The policy all season has been to send ore forward to the furnaces, but now they are stock piling on the docks, and vessels may have a chance to make another trip if the ore is not frozen; however, the season is practically over, and little more freight is expected to be earned.

The Detroit & Cleveland Steam Navigation Co. will take a party of Cleveland marine men over to Detroit Friday night to attend the launching of the first passenger steamer of the Detroit & Buffalo line on Saturday. These boats will open a new route between Detroit and Buffalo next year. They are expected to make the run between the two cities in about 14 hours.

The Rutland Transit Co., plying between Ogdensburg and Chicago, represented by Mr. W. J. Farasey, the well known steamboat agent and wharfinger, will have their last steamer out of Cleveland December 5th. She will receive about 660 tons of cargo for Milwaukee and Chicago. This line has handled a large amount of freight from this port under Mr. Farasey's agency.

The delegates of the International Longshoremen's Association from the Lake Erie ports and the dock managers met in joint conference here this week. The men want a small advance in wages over last winter's schedule and they also asked that some minor items be added to the agreement. Last year the men were paid 7½ cents a ton for shoveling ore from the docks to cars and now they want 8 cents. The delegates withdrew after presenting their demands, which were discussed by the managers.

The following meteorological observations are furnished by the office of the U. S. Weather Bureau for the week ending December 4th. Prevailing wind directions for the week, northwest; highest velocity, 36 miles from northwest on December 3rd; mean temperature for the week, 34;

highest temperature, 59 on December 1st; lowest, 22 on December 4th. Sunrise and sunset data computed for local time, December 5th, sun rises, 7:12, sets, 4:29; December 8th, sun rises 7:15, sets 4:29; December 11th, sun rises 7:18, sets 4:29.

The Nicholson Ship Log Co., of 204 Superior street, have issued a neat catalogue which describes the Nicholson log manufactured by them. The log is enclosed in a case, with plate glass front and sides, standing 31 in. high, 19 in. wide and 9 in. deep, and can be placed in the pilot house, captain's cabin, engine room, or main saloon. The log was used on the steamboat City of Erie during her race with the Tashmoo on Lake Erie this summer. From what experts say the log is perfect in its mechanism and works excellently and true.

The Iron Trade Review in its special edition of November 14, is a splendid example of modern trade journalism. It covers 124 pages of valuable data and matters related to the iron and steel industries, and is handsomely illustrated. Among its special articles are "Landmarks in the Rolling Mill Industry of the United States;" "Twenty-five Years of Engineering Progress in the Iron Industry;" "Development of Open Hearth Steel;" "Examples of Evolution in Machine Tool Practice;" "The Development of Rolled Structural Shapes," and other valuable contributions to technical literature. Great credit is due the publishers of the Iron Trade Review for their energetic and enterprising work in trade literature.

The following resolutions were recently adopted by Cataract Lodge, No. 2, Amalgamated Association of Iron, Steel, and Tin Workers, Cleveland: "Whereas, By the recent method of employing labor in the navy yards, mechanics and laborers are no longer discriminated against by reason of their political proclivities, thereby eliminating all favoritism, there no longer exists any good reason why the building of vessels of war should not be prosecuted as economically and expeditiously in the various navy yards of the country as the same can be done by private contractors; and, Whereas, We feel satisfied that the assignment of a portion of this work to the navy yards would enable a larger proportion of the toilers of the country to participate in the benefits of the eight-hour day without corresponding loss to the government; therefore, be it resolved, That our Senators and Representatives in Congress are earnestly requested to assist in having inserted in the next naval appropriation bill authorizing the construction of warships a provision that some of the vessels provided for in such bill shall be constructed in the navy yards of the country."

FLOTSAM, JETSAM AND LAGAN.

The Adams Transportation Company, of Detroit, owner of the wooden steamer Tom Adams, has just let a contract with the Craig Ship Building Co., of Toledo, for a steel freight steamer, 356 feet long, fifty feet beam and twenty-eight feet deep. The boat is to cost \$235,000, and to be ready for launching July 1, 1902.

About December 1 the Boston & Lockport Block Co. will remove their Boston office and stock room from No. 142 Commercial street, to Nos. 158 and 160 Commercial street, where new apartments are now being fitted up to better accommodate their increasing business. They are to occupy the entire building of five floors and a basement. The first floor will be devoted exclusively to offices, and the others to stock.

A new electrical apparatus provided for the Diamond Shoal Lightship No. 71, on the Cape Hatteras Station, is to send a thirteen-inch beam of light from the ship's deck to the clouds. The clusters of light now at the tops of the two masts are visible thirteen miles at sea, but it is expected that the pillar of light rising to the skies may be seen thirty and forty miles at sea. This new marine signal, which will be put in operation January 1, is the device of Comdr. Albert Ross, U. S. N., inspector of the Fifth Lighthouse District. It is expected that the sky piercing shaft of light will also be adopted at Fire Island, Sandy Hook and Nantucket Shoals lights. It is not proposed to abolish the present mast-head beacons. As a guide to mariners coming in from sea, the thirteen-inch electric beam, reaching up into the dome of night, will be, it is said, as far ahead of big electric beacons of the first order as the beacons were ahead of oil lamps. This innovation is of world-wide interest.

THE MARINE RECORD.

CANADIAN IRON ORE DEPOSITS.*

BY C. R. VAN HISE.

In this paper it is not my purpose to consider the iron-bearing districts of the Lake Superior region which are not producing and have not produced iron ore. Consequently I have not mentioned various areas on the United States side of the boundary, some of which are known to contain iron-bearing formations, and yet have not produced iron ore; for instance, the Huronian of the Baraboo and the Black River Falls districts, both in Wisconsin. If the plan were strictly followed, and the districts only were mentioned which have produced iron ore, except for the Michipicoten district, no mention would be made of Canada, since up to the present time ores have been exploited at only a single mine in the Lake Superior region north of the international boundary. However, this would be hardly fair, since in the Lake Superior region of Canada the iron-bearing rocks are known to have great development. In these rocks at various places are extensive belts of iron-bearing formations. In some of them, also, iron ores actually outcrop, as for instance in the Atikokan range.

The Upper Huronian and Archean iron-bearing series exist, and possibly the Lower Huronian iron-bearing formation. Moreover, some of these series are a direct extension of the series which have been productive on the United States side of the boundary. Undoubtedly equivalent with the upper Huronian Mesabi iron-bearing series is the Animikie series of Thunder Bay, which extends from Gunflint Lake on the international boundary east beyond Port Arthur on Lake Superior.

The Vermilion iron-bearing series has been traced by us to Hunter's Island. Thence these rocks have been mapped by the Canadian survey as extending first in a northeasterly and then in an easterly direction to the Kaministiquia river, and thence eastward to the Keweenawan rocks west of Lake Nipigon. Another great belt of iron-bearing rocks with various ramifications has been traced by the Canadian survey from Rainy Lake eastward to the Canadian Pacific Railway and to Lac des Mille Lacs. In this belt occurs the so-called Atikokan range, in which large deposits of iron ore are said to outcrop.

East and north of the east half of Lake Superior, various areas of iron-bearing rocks are also found. One or more belts are said to extend east from Lake Nipigon. A belt is found adjacent to the Black and Pic rivers. Several belts of iron-bearing formation have been found in the Michipicoten district.

At the present time the only one of these districts which is an ore producer is the Michipicoten. While this district has not been connected areally and structurally with any other area in the Lake region, the likeness in the character of its rocks and the succession to the Vermilion district leaves little doubt in my mind that the two districts are in most essential points parallel. In the Michipicoten district the basement rock is a greenstone, showing the ellipsoidal structure on the great scale so characteristic to the Ely greenstone of the Vermilion district. Also with this greenstone are various other mashed igneous rocks, including porphyries. The iron-bearing formation in many essential respects resembles that of the Vermilion district. It contains substantially all the varieties of material in the iron formation of the Vermilion district, and in addition great quantities of pyritic quartz rock. On the bluff back of the Helen mine and at many other places, iron carbonate is abundant. Near the Helen mine Mr. Marriam reports this carbonate as containing 19 to 37 per cent. of metallic iron. These abundant cherty carbonates leave little doubt that the ferruginous cherts, ferruginous slates, jaspere, and iron ores have mainly developed from a carbonate as the original rock, precisely as in the various districts south of Lake Superior. However, it is clear that the pyrite of the carbonates and the pyritic quartz rocks have also made contributions. At the present time the iron formation has been developed only at the Helen mine. Here a good body of high-grade hematite has been shown by stripping to extend in considerable areas to the rock surface. In 1900, the first year of shipment, 62,000 tons were shipped. Whether or not the Michipicoten district will be a great producer in the future can not be told, of course, in advance of development.

A further analogy between the Vermilion and Michipicoten districts is furnished by an upper series in the latter district consisting of mashed conglomerates and slates, the former bearing very numerous fragments of the lower series, including the iron-bearing formation, precisely as in the Vermilion district. This clastic formation has a slaty structure, and is in vertical attitude, and is almost identical with the Ogishke conglomerate and Knife formations of the Vermilion district.

As yet the various districts which may bear merchantable iron ore in quantity have been outlined only in the most general way by the Canadian survey, but the reconnaissance reports descriptive of them, show that both Archean and Lower Huronian rocks occur, and that at least the Archean iron-bearing formation exists. The Canadian survey has not attempted to separate the iron-bearing formations from the associated rocks. Such work is necessarily slow and expensive, and the vastness of the region of Canada where preliminary work was necessary, has been a sufficient cause for not taking up this work. Doubtless in the future, the iron-bearing formations will be separately mapped. When this is done it will undoubtedly be very

helpful to the development of the iron ore resources of this region.

With one possible qualification, so far as one can see, there is no known geological cause why iron ores should not extensively exist on the Canadian side of Lake Superior. This qualification is due to glacial erosion. In this paper it has plainly appeared that the iron ore deposits are products of the surficial belt, and that they were formed mainly in pre-glacial times. It has also been seen that glacial erosion, which removed a considerable portion of the belt of weathering, certainly carried away large quantities of the iron ore, which have not been appreciably replaced by the processes of concentration since glacial time. The United States side of the boundary is a region of moderately vigorous glacial erosion and very marked glacial deposition. The region on the Canadian side of the boundary north of Lake Superior is one of very vigorous glacial erosion and comparatively small glacial deposition. As a consequence the rocks are much better exposed on the Canadian side than on the United States side of Lake Superior. It is a mooted question whether the Continental glaciers deeply eroded the nondisintegrated rocks. It is agreed on all hands that the larger part of the disintegrated material was swept away. But this is as true south as it is north of Lake Superior. However, it can not be doubted that the glacial erosion was more vigorous north of Lake Superior than to the south. In so far as the glacial erosion was more vigorous, just to that extent more iron ore was lost north than south of the lake, and the conditions are to that extent less favorable for the existence of numerous large ore deposits. The weight which must be given to this qualification can only be ascertained after extended exploration and exploitation. Certainly it appears that the rocks in the Animikie area between Gunflint lake and Port Arthur, contain more of the original iron-bearing carbonate, and show less of the residual material of the belt of weathering, viz., ferruginous slate, ferruginous chert, and ore bodies, than the Mesabi range, its continuation to the southwest. If the Animikie rocks were once as deeply altered and contained large ore bodies, these appear to have been largely swept away, thus exposing the little altered rocks. If in the Mesabi district glacial erosion had cut 150 feet deeper than it did, the larger portion of the ore deposits would have been lost. Moreover, the Gunflint formation of the Animikie district is not nearly so thick as the Biwabik formation of the Mesabi district. It may therefore, be doubted whether the Animikie district will ever be so productive in iron ore as the Mesabi district. Whether a similar comparison should be made between other equivalent districts on opposite sides of the international boundary is uncertain. This matter is one, however, which should be considered by those who take up the development of the district north of Lake Superior.

While, therefore, it may be possible that on account of glacial erosion the product of high-grade ore in Canada may be less than in the districts of similar size and geological position on the United States side of the boundary, it can not be doubted that in the future important quantities of iron ore will be exploited in the Canadian Lake Superior region. Doubtless also this exploitation would have begun many years ago, were it not for the duty which ores mined in Canada must pay when entering the United States.

A SUBMARINE EXPERIMENT.

An important duration test of the submersion of a submarine torpedo boat was carried out with the Holland submarine boat Fulton in Peconic bay, off Cutchogue, L. I., on the night of Nov. 23. The vessel was submerged for a period of 15 hours, lying upon the bottom of the harbor with a crew of eight men including naval officers and officials of the Holland Co. The vessel was submerged in 15 feet of water, with the top 6 feet under water. There was no connection whatever between the boat and the shore. During the time the vessel was submerged there was a heavy storm, doing considerable damage on shore, but conditions on the surface were unknown to the occupants of the submerged vessel, the boat not being disturbed in any way. The vessel was equipped with tanks of compressed air to replenish the air in the vessel for breathing purposes, but none of it was used. The vessel rose by forcing the water ballast from its compartment by releasing one of the flasks of compressed air.

Shipping—Charter of Launch—Defects in Machinery.—A steam launch was demised by charter to be used on the Hudson river as a coaching launch for college boat crews. It was warranted by the owner to be in good condition, and the charterers engaged to return it in the same good condition "damage by usual wear and tear excepted." In the course of its use it became necessary to procure a small boat from a former boathouse on the Harlem river, and the launch was sent for it, and while on the trip it was disabled by the breaking of a pin which connected the eccentric with the shaft of the engine. Held that such use of the boat was not a violation of the charter, being germane to the purpose therein specified, and did not render the charterers liable for the damages, which must be regarded as resulting from a defect in the pin or machinery, which showed that the launch was not in good condition as warranted, as well as within the exception of usual wear and tear; it being shown that the engineer in charge was competent, and that the machinery was not subjected to any unusual strain, but was being used in the ordinary manner. *Sutcliff vs. Seligman et al.*, 110 Fed. Rep. (U. S.) 560.

*From "The Iron Ore Deposits of the Lake Superior Region," to be published as part of the 21st annual report of the U. S. Geological Survey.

NOTES.

MR. JACKSON, secretary of the United States embassy at Berlin, reports that the total traffic of the Kaiser Wilhelm canal in 1900 was 29,571 ships, exclusive of German war vessels. On June 15, 1900, 118 vessels of a total tonnage of 20,649 passed through the canal and the big German cruiser Fuerst Bismarck and the Japanese cruiser Yukumo, both very large vessels, have traversed it successfully.

THE United States Civil Service Commission, Washington, D. C., announces that examinations will be held at various places throughout the country, December 30-31, 1901, for heating and ventilating draftsman, Treasury Department, at \$1,200 a year, and January 2, 3 and 4, 1902, for five mechanical draftsmen. Ordnance Department, at \$1,200 a year. Further particulars, application blanks, etc., may be had from the Commission.

A RECENT order from the Treasury Department Steamboat Inspection Service requires that all fusible plugs in the future shall have the name of the manufacturer stamped thereon, and the inspectors are to satisfy themselves that the metal with which they are filled is fusible beyond a doubt. This is a proper and necessary measure, and one which no vesselowner should consider a hardship to comply with or otherwise than perfectly consistent, right and proper.

THE fifth annual report of Secretary of Agriculture, Hon. James Wilson, is considerably larger than in former years, reflecting the great growth of that department. He announces an important extension of the forecast field of the Weather Bureau. An extension of the forecast to farmers through the rural free delivery is contemplated. Congress appropriated \$3,303,500 for the United States Department of Agriculture for the fiscal year ended June 30, 1901, being an increase of \$558,920 over the appropriation for the preceding year. When all accounts shall have been finally settled the payments will amount to about \$3,220,000.

IN "The March of Events," in the World's Work for December this magazine continues to describe and admire President Roosevelt, and deals with the Schley inquiry, the Southern Educational Conference and conditions in national and municipal political life. In Among the World's Workers striking incidents in the practical workings of finance, railroads, commerce, labor questions and new inventions are reported, and in the Work of the Book World, beside the usual concise reviews of new books is an article by Frank Norris on "The Need of a Literary Conscience," which every book writer and book lover should read.

WITH reference to the amalgamation of the executive and engineer forces in the American Naval Service, "Le Yacht" of Paris, remarks: "The United States have attempted to solve the problem by combining the two corps of executive and engineer officers, but one should notice the special conditions that hold in that country. Since 1868 all the engineer officers have passed through the school at Annapolis, where they have followed a portion of the course of study for executive officers; it is then only a case of bringing together school-fellows temporarily separated. The officers had numerous associations in common, which is not the case in other countries. In spite of this the fusion has been attended by considerable difficulties. The result is, says an American report, that there are not enough engineer officers, while there is quite a glut of deck officers of inferior ability."

THE NORTH AMERICAN REVIEW for December contains a vast amount of good reading. It opens with a notable symposium, comprising no less than seven articles, which is entitled "Some Questions for Congress." General Lew Wallace emphasizes the necessity for adopting some measure that will ensure the "Prevention of Presidential Assassinations." Senator J. C. Burrows insists upon "The Need of National Legislation Against Anarchism," detailing several unsuccessful attempts which have been made in that direction. Edgar Aldrich, United States District Judge of New Hampshire, shows that the federal government has the power to protect its own agents, and offers the draft of a bill whose provisions would be adequate to the requirements of the existing situation. The Duke of Arcos, the Spanish Minister, advocates steps leading to an "International Control of Anarchists." Edwin F. Atkins, warns the country that something must be done at once to avert "Cuba's Imminent Bankruptcy." Professor N. S. Shaler, of Harvard, writes of the advantages the country would derive from "The Proposed Appalachian Park." Joaquin Miller denounces the idea of re-enacting the Chinese Exclusion Act as an injustice to the people of the Pacific States no less than to the Chinese. Secretary Gage defends the "Customs Inspection of Baggage," and gives an interesting account of the circumstances and practices which necessitated the present rigorous system. Marion Wilcox describes and analyzes the "Opportunity of the Roosevelt Administration." Rear Admiral G. W. Melville explains why he doubts whether a practically satisfactory solution will ever be found for "The Problem of Aerial Navigation." Walter Wellman, pointing to the changes which have occurred in international conditions since the time of President Monroe, and to the necessity for our strengthening our hold upon the isthmus and the Caribbean Sea, asks "Shall the Monroe Doctrine be Modified?" so as to be less rigidly applicable to portions of South America where our interests are secondary.

SHIP SUBSIDY—RIVER AND HARBOR BILL.

Gen. Grosvenor of Ohio has given out an interview criticising Representative Burton of Cleveland, and chairman of the river and harbor committee, for opposing the ship subsidy bill, and charging that in such opposition Mr. Burton is inconsistent because, he is at the head of what Gen. Grosvenor calls the "greatest scheme of subsidy ever entered upon in the United States."

Senator Hanna, it is said, is willing to break into print in criticism of Mr. Burton for the latter's opposition to ship subsidies. It is even reported that Mr. Hanna threatens to oppose the appropriation carried in the river and harbor bill for a breakwater at Cleveland if Mr. Burton does not get into line with the ship subsidy. The same threat was accredited to Senator Hanna last year when Mr. Burton let his opposition to the subsidy bill be known.

Gen. Grosvenor's interview represents his deliberate thought. This in connection with the fact that he also declares the irrigation of arid lands at government expense would be a subsidy in the same class as the shipping bill, leads to the suggestion that the friends of the shipping bill have taken this means to intimate to the friends of river and harbor improvements and arid land irrigation that their bills and the ship subsidy bill will stand or fall together. In other words, that if there is no ship subsidy bill there will be no river and harbor bill.

Discussing Mr. Burton's opposition to the ship subsidy, Gen. Grosvenor said in part:

"I am very much surprised that the distinguished chairman of the rivers and harbors committee should have made so sweeping a statement in regard to subsidies, inasmuch as, if I understand the matter correctly, he is the leader and champion of the greatest scheme of subsidy ever entered upon by the United States. No committee of the House of Representatives from the time when the doctrine of aid to public works was settled beyond dispute as legal has done a moiety in amount of the subsidy business that has been reported from the rivers and harbors committee."

take up Mr. Burton's bill of the last Congress, even without aid of ex-Senator Carter, and show how far away from public benefaction a large amount of that appropriation is.

The river and harbor bill has been assaulted constantly on the floor of the House for indefensible subsidies to private individuals. Nobody will deny that the assaults have been well taken in many cases, but there is not an argument against the general bill so much as it is an admonition against the preparation of the measure. Improvements in railroad embankments, improvements in real estate by the protection of the banks and shores of harbors and rivers and lakes surrounding waterways, and all the various devices which we have had knowledge of in the past, do not constitute sufficient argument against the appropriation of money, but merely warn the Congressmen to be on the alert lest similar provisions make their appearance in the future.

Now coming to the appropriations for ocean steamship subsidy. We are in a great international struggle to-day with all nations of the world who own ships and are interested in ship industries, and we are struggling for the business of carrying the commodities of the United States to other countries. It may be said the competition is with the foreign steamship company or foreign sailing vessel and if we do not subsidize our lines the steamships and sailing vessels of other countries will carry our products. Let us apply this principle. If you do not dredge the Ohio river and spend the \$60,000,000 required for improvement, the railroads will carry the commodities, for there is a railroad on each side of the Ohio river from Pittsburgh to Cincinnati, so you see how a plain statement puts down the argument. Today we are paying \$200,000,000 per annum, or in that neighborhood, to the labor and capital of foreign ships carrying the product of the labor of our own artisans and workingmen, and it is proposed to make this small subsidy, not large enough to cover the appropriation for the same period of time for the Ohio river and lake north of us, for the purpose of establishing once for all a clear system of ocean transportation that shall, united with the sub-

SHIPPING AND MARINE JUDICIAL DECISIONS.

(COLLABORATED SPECIALLY FOR THE MARINE RECORD.)

Carriers of Passengers—Injury to Passengers—Presumption of Negligence.—The explosion of a steam drum on a steamer, by which passengers were injured, is *prima facie* evidence of negligence on the part of the carrier in a proceeding to recover for such injuries. *In re California Nav. & Imp. Co.*, 110 Fed. Rep. (U. S.) 670.

Negligence—Burden of Proof.—Where elevated bins holding crushed stone gave way, precipitating the stone, etc., into the water, and damaging a scow moored beneath them for the purpose of loading stone thereon, the burden was on the owner of the bins to show freedom from negligence. *Hastorf vs. Hudson River Stone Supply Co. et al.*, 110 Fed. Rep. (U. S.) 669.

Salvage—Compensation—Priority of Lien.—A claim for salvage services rendered to a vessel injured in collision is entitled to a preference in the distribution of the proceeds of such vessel or the fund paid into court or secured in proceedings for limitation of liability, over claims of passengers for personal injuries or loss of baggage, or for damages sustained by the other vessel in the collision. *In re California Nav. & Imp. Co.*, 110 Fed. Rep. (U. S.) 678.

Limitation of Liability—Charterer.—A lighterage company which contracts to transfer cargo from one ship to another, and for that purpose charters a lighter, the lighterman, who employs the stevedores, and superintends the work, being furnished by the owner, is not entitled to a limitation of liability, under Rev. St. sec. 4286, for a loss of cargo by the capsizing of the lighter through negligent loading. *Smith vs. Booth et al.*, 110 Fed. Rep. (U. S.) 680.

Master and Servant—Injury to Servant—Liability of Master.—In an action against the owner of a steamboat to recover for the death of a fireman employed thereon through the explosion of a steam drum near which he was working, the fact of the explosion is not sufficient to charge the defendant with liability, but the burden rests on plaintiff to further prove that defendant failed in its duty to exercise reasonable care to make and keep the drum in a safe condition. *In re California Nav. & Imp. Co.*, 110 Fed. Rep. (U. S.) 670.

Shipping—Loss of Cargo—Harter Act.—Section 3 of the Harter Act, which exempts owners of vessels which are in all respects seaworthy and properly manned, equipped, and supplied from liability for loss of merchandise or property resulting from faults or errors in navigation, applies in a case where the question of liability arises in a proceeding by the owner for limitation of liability, as well as in a direct action against him. *In re California Nav. & Imp. Co.*, 110 Fed. Rep. (U. S.) 678.

Evidence—Sufficiency.—Elevated bins loaded with crushed stone gave away, precipitating the stone into water, and damaging a scow moored beneath for the purpose of being loaded with stone. The bins were not overloaded at the time, and had been frequently examined without finding defects. They were erected by a competent engineer. Two witnesses testified that they told the man in charge of the scow to move it twenty minutes before the accident occurred. Held, insufficient evidence to show negligence on the part of the defendants, but negligence by the scowman, the libelant's employee. *Hastorf vs. Hudson River Stone Supply Co. et al.*, 110 Fed. Rep. (U. S.) 669.

Bills of Lading.—Bills of lading for a shipment of rice from Liverpool required its delivery to W. & Co. in New York, by whom it was to be transshipped and forwarded by a steamer of a company operating a line to Havana, "on terms, tenor, and conditions of bill of lading of the aforesaid company." The goods were lost by the capsizing of a lighter employed by W. & Co., while being transferred to the Havana steamer. Held, that the bill of lading which would have been issued by such steamer did not become operative, since the goods were not delivered on board, and that W. & Co. could not avail themselves of its provisions to relieve themselves from liability for the loss. *Smith vs. Booth et al.*, 110 Fed. Rep. (U. S.) 680.

Shipping—Breach of Charter—Delay in Reaching Port of Loading.—A schooner chartered for loading at Baltimore, with privilege of taking a part cargo at New York, for ballast, to Baltimore, took on two kinds of cargo at different places, amounting in all to 432 tons, her cargo capacity being 900 tons. Owing to delay in obtaining part of the cargo, and to bad weather, she did not leave New York until twelve days after the charter was signed, and prior to her arrival in Baltimore the charterer gave notice that he would not accept her, claiming that she had violated the charter by delay to load more cargo than was required for ballast. Held, that under the terms of the charter she was entitled to a reasonable time, no time being stipulated, and that the amount of ballast required was a matter within the discretion of her master, having regard not only to her safety, but to her sailing qualities; that, in the absence of evidence showing that he had abused his discretion, or that there had been unreasonable delay, there was no breach of the charter which justified the charterer in refusing to accept the vessel. *McKeen vs. Davis Coke & Coal Co.*, 110 Fed. Rep. (U. S.) 576.

MONTHLY SHIPBUILDING RETURNS.

The Bureau of Navigation reports 92 vessels of 21,099 gross tons were built in the United States and officially numbered during the month of November, 1901, as follows:

	WOOD.				STEEL.				TOTAL.			
	SAIL.		STEAM.		SAIL.		STEAM.					
	No.	Gross.	No.	Gross.	No.	Gross.	No.	Gross.				
Atlantic and Gulf.....	46	8,391	13	341	7	7,075	66	15,807				
Pacific.....	5	3,511	6	703	.....	.....	11	4,214		
Great Lakes.....	.....	1	99	.....	.....	.....	1	99		
Western Rivers.....	.....	14	979	.....	.....	.....	14	979		
Total.....	51	11,902	34	2,122	.....	.....	7	7,075	92	21,099

The largest steel steam vessel included in these figures is the *El Siglo*, 4,616 gross tons, built at Newport News, Va., Southern Pacific Co., owners.

Having defined the word "subsidy," to show that the lexicographers sustain his claim, General Grosvenor continues:

"The greatest in amount and quality of subsidy ever suggested in all our history is the subsidies provided for in the rivers and harbors bill, and no man, I think, will deny that in a large part, if not in whole, the appropriations in the rivers and harbors bill are subsidies—subsidies in the narrowest and concrete meaning of the term, subsidies for private enterprises, subsidies for the purpose of building up one town, one section, one strip of country at the expense of all other sections and strips of country. By far the narrowest and most selfish appropriations and most personal and least public of all the subsidies proposed now or that ever were proposed are carried in the rivers and harbors appropriations."

"We came very near in the last Congress appropriating what would have been equivalent in the long run to more than \$1,000,000 for the purpose of subsidizing certain water enterprises, one half of which—I will make a careful estimate—would have benefited nobody save and except the people located right along the banks and shores where the appropriations were to be expended. We propose to appropriate more than \$60,000,000 to the building of locks and dams in the Ohio river, and I am in favor of it. Who will be benefited? The owners of the coal in the Monongahela and all the great tributaries of the Ohio river that are teeming with this indispensable article. And who pays for this? Why, the people in Boston and the people in Seattle and all the people alike. It is for the benefit of everybody."

"There are states in this union which really receive absolutely no direct benefit from the river and harbor improvements, and almost, if not quite, no benefit at all from any river and harbor improvement. Take Montana, Wyoming, Colorado, Nevada, the two Dakotas and what do they get out of the countless millions that Mr. Burton's committee propose appropriating this year? And yet they must pay, under the system we have, their full share of the expense. If I were not a strong advocate of river and harbor improvements, I think that I could

subsidies in Mr. Burton's bills in Congress, take the product of the ore miner at Duluth and deliver it in the form of finished product in every available market of the world.

"By what has been said the two systems, the one for appropriations for the improvements of rivers and harbors, and the other for expenditure of subsidy for steamship lines of the ocean are, in essence, identical in principle, and there is but a single question connected with either one of them, and that is, is the appropriation wise?

"I did not enter upon this discussion for the purpose of arguing that question. By this identical line of reasoning, which in my judgment, is unanswerable, the fact is established that the expenditure for the reclamation of arid land now so vigorously clamored for and for which such strong arguments are being presented is simply a subsidy on all fours in principle for the subsidy in steamship lines. The enormous expenditure of money required for the irrigation scheme and insisted upon by so many able and intelligent gentlemen is wholly inconsistent with the outcry against subsidies for steamship lines and the improvements of rivers and harbors which many of the irrigation advocates are making."

Place to Work—Failure to Make Proper Inspection.—A steam drum connected with the boilers of a steamboat exploded, killing a fireman, who was working near. The drum had been in use several years, and the steam pressure at the time of the explosion was less than the boilers were permitted to carry. A short time previously a leakage of the drum had been discovered, but no examination or test was made to discover its cause. Held, that the bursting of the drum must be attributed to its having become weakened from some cause, which the evidence tended to show might also have been the cause of the leakage, and that the owner of the vessel, which was the employer of the deceased, was liable for the death under a state statute giving a right of action therefor, on the ground that it failed in its duty to exercise reasonable care to make the drum safe by a proper inspection and repairs. *In re California Nav. & Imp. Co.*, 110 Fed. Rep. (U. S.) 670.



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CLEVELAND, O., DECEMBER 5, 1901.

IMPROVING THE LIGHT-HOUSE SERVICE.

The Secretary of the Treasury has submitted to Congress in his appropriation estimates the following additions and improvements to the Michigan service:

Establishing a light and fog station at or near Point Aux Barques, near Manistique, \$32,000. This point should be lighted to complete the system of coast lights on Lake Michigan and is now required by the increasing commerce of the lakes. Portage, Lake Michigan, light station, for a keeper's dwelling, \$3,500; Kewaunee, Wis., light and fog signal station, for a double keeper's dwelling, \$7,500

Holland pierhead range, Lake Michigan, Mich., for the establishment of a fog signal at Holland pierhead range, \$6,000. Holland is the port of entry for Grand Rapids, Mich., and is doing considerable lake business. A fog signal should be established there. St. Martin Island light and fog signal station, Michigan, for establishing a light and fog signal station on St. Martin Island, St. Martin passage, entrance to Green Bay, Lake Michigan, \$14,000. Little Gull Island, light and fog signal station, Michigan, establishing a light and fog signal station on or near Little Gull Island, St. Martin's passage, entrance to Green Bay, Lake Michigan, \$20,000.

Grassy Island range light station, Ecorse, Mich., building a new dwelling for the keeper of Grassy Island range (Ecorse), Mich., \$5,000.

Grosse Isle, south channel range, light station, Michigan, building a dwelling for light keeper at Grosse Isle, south channel range light station at Detroit river, Mich., \$5,000. The light keeper is now living in a dwelling belonging to the service on Mamajinda Island, which is on the opposite of the channel at quite a distance from his station. This is not only inconvenient but dangerous. Grosse Isle channel range light station, Mich., building a light keeper's dwelling at Grosse Isle, north channel range light, \$3,500. Middle Island, Mich., light and fog signal station, establishing a light and fog signal station on Middle Island, Lake Huron, Mich., \$25,000; Crisps' Point, Mich., light and fog station, establishing a light and fog signal station at or near Crisps' Point, Lake Superior, Mich., \$18,000.

Rock of Ages, Mich., light and fog signal station, constructing a light and fog signal station on the Rock of Ages, at the Western end of Isle Royal, Lake Superior, Mich.

BILLS OF LADING.

Between the present time and the opening of the season of navigation next spring several important changes will be considered by vessel owners, and the one which is now attracting considerable attention is the bill of lading proposition.

The Detroit Free Press says: It is urged, and not without some grounds, that the individual owners during the past season have been getting considerably the worst of the deal, and they contend that the forms of the bills of lading should be changed so as to contain provisions for the payment of owners for the time, over forty-eight hours, that boats are held in port waiting for a cargo to unload.

These delays have been numerous, especially in the ore trade at receiving ports, during the season now drawing to a close, and for the past two weeks the congested condition of the grain elevators in Buffalo harbor have held up many boats and will probably prevent them from making another trip either to the head of the lakes or to Chicago.

The advocates of the reform say that at present the bills of lading simply call for the delivery of the cargo, no time limit or compensation for unusual delays having been provided for.

During the winter those who think that something should be done will try to get together and revise the forms of bills of lading and exact from the shippers a reasonable compensation for delays over and above the actual time necessary to load and unload. This movement will be along the present policy of the railroads to charge demurrage upon tonnage held over a specified length of time.

Said a prominent vessel owner yesterday: "There is no reason why boats should be made to stand the loss for the time held in port any more than a railroad should stand for the loss of its cars while they are being held to suit the convenience of the consignor or consignee. A railroad has a fixed rate which it charges for its cars after a reasonable time to unload or load has expired, and why should a vessel owner be placed in a class by himself and be compelled to have his boat tied up idle awaiting the pleasure of the shipper or consignee to take the cargo?"

"During the coming winter it is more than probable that the independent owners will endeavor to get together to frame a new bill of lading, providing for a demurrage charge and if the owners will stand together they can force the shippers to give better dispatch or pay for the delay of the vessels in port waiting to either load or discharge a cargo."

This may be one of the many important matters to be considered at the annual meeting of the Lake Carriers' Association in Detroit next January.

THE thanks of the RECORD are due the Commissioner of Navigation for a copy of the 33rd. annual list of merchant vessels of the United States, with the official numbers and signal letters, also the list and distinguishing signals of vessels of the Navy, Quartermaster's Department, Engineer Department, Mississippi and Missouri River Commission, Revenue Cutter Service, Light-House Establishment, Coast and Geodetic Survey, Fish Commission and Marine Hospital Service for the year ended June 30. Signal letters are assigned to seagoing vessels of the United States, and, upon application made through a collector of customs, they will be granted to yachts, and, in particular cases, to other vessels, if necessary. Such letters are requisite in order to afford the means of recognition by signals at sea.

The Bureau of Foreign Commerce has received the following letter from A. A. W. Van Reede, Rotterdam: "There is at present a great demand for American coal, especially anthracite, here and in Germany, and I am very anxious to obtain all possible information regarding this special kind. I have in mind only the very best quality. I am referred to you by the American consul here. If possible, kindly give me names of the best mines and where located; also names of owners and headquarters in this line. As I ask this information with the view of importing anthracite at Rotterdam, you will understand best what data would be most valuable."

THE minister of commerce of France is arranging to establish a technical school in the United States where French students may study American methods of production. Formerly students were sent from France to England and Germany.

RUSSIAN RIVER TRAFFIC.

Everywhere up the Volga and its hundred tributaries ascend the iron barges of the Caspian Sea oil fleet, while through the canals to St. Petersburg alone pass annually during the 215 days of free navigation thousands of steamers and barges bearing millions of tons of freight. Every known means of locomotion is used, from men, who, like oxen, tramp the tow-paths, hauling the smaller barges, to powerful tugs that creep along by means of an endless chain laid in the bed of the canals and minor rivers, dragging after them at snail pace great caravans of heavy barges.

From the greater streams immense craft nearly 400 feet long, 15 feet in depth, carrying 6,000 tons of freight, drift down to the Caspian, where they are broken to pieces to be used as fire-wood on the steamers going up stream. In all there are 8,000 miles of navigable waterways in the valley of the Volga, or if the streams which float the giant rafts that form so large a part of the traffic of the rivers are included the mileage is increased to nearly 15,000, or as much as that of the valley of the Mississippi.

Fifty thousand rafts are floated down the Volga annually, many of them 150 feet long by 7 thick, and this gives but a faint idea of the real traffic of the river, for in addition there are 10,000,000 tons of produce passing up and down the river during the open season. Much of this centers at Nijni Novgorod. To this famous market steamers and barges come from all parts of Russia, bringing goods to be sold at the great annual fair, over \$200,000,000 worth of merchandise changing hands in a few weeks. Thirty thousand craft, including rafts, are required for this traffic. They come from as far north as Archangel, as far east as the Ural, from Astrakhan in the south, St. Petersburg and Moscow in the west, while great caravans of ships of the desert arrive daily from all parts of Asia.—Engineering Magazine.

BRIDGE AT DULUTH.

Work on the long talked of aerial bridge, says the Duluth News Tribune, has been begun and it will be carried forward with the utmost rapidity consistent with the best results. N. F. Hugo, one of the contractors, said yesterday that the substructures would probably be completed in 60 days.

It doubtless will be of interest to many to know what the substructures, one on either side of the ship canal, will consist of. Each will be 14x28 feet in size. In the first place piling will be driven to a depth of about 37 feet. At least they will be put down to that depth, but they cannot be driven that deep by the old method of a pile driver. Arrangements have been made to jet the piles down. The holes will be bored by hydraulic pressure, and the piles will be put in as thick as possible. It is estimated that about 70 piles will be put at the bottom of each of the substructures. On top of the piles there will be four feet of oak timber. The top of the pine timber will be submerged about 2½ feet, and on top of this will be built the concrete foundation upon which the steel superstructure will rest. The concrete will extend 7 feet above the water, making the total depth of the concrete about 9½ feet.

The contract for the steel superstructure, as has been previously announced, has been awarded by the Duluth Canal Bridge Co. to the United States Steel Co., and it is believed that the former fully intends to complete the structure by June 1 in order to earn the bonus of \$4,000. In that event the bridge will be available for traffic for almost the entire season.

Admiralty—Collision—Ferryboats—Tug and Tow.—Inland navigation rules, articles 19 (2 Supp. Rev. St. p 639), gives a tug and tow going up East river right of way over ferryboats. Article 22 requires ferryboats to avoid crossing ahead of tugs and tow, if the circumstances admit, and article 23 declares that a ferryboat, on signaling to cross a tug and tow, and getting no answer, shall stop and reverse. Held, that where a ferryboat on coming from her slip was 1,000 feet from a tug and tow coming up the river about mid-stream, and though there was no reason why the ferry could not have passed astern of the tow, she claimed to have signaled to pass in front, and, on getting no response from the tug, kept her course until she was within fifty feet of the tow, when she endeavored to stop, but was struck by the tow, the ferryboat was at fault, and not entitled to maintain a libel against the tug and tow. The Thomas B. Garland, 110 Fed. Rep. (U. S.) 687.

BELGIUM WANTS AMERICAN COAL.

The question of cheap fuel for Northern Europe has engaged the minds of the people for some years, especially for the past two or three, since the price of coal has advanced so rapidly, says Alfred A. Winslow, consul at Liege. This has seriously crippled industries, and, according to the best information I can obtain, this condition will become worse rather than improve. The cost of production must continue to rise—first, because of the increased depth of the mines, which now average more than 1,000 feet in the Liege basin, with veins of coal only about 27 inches in thickness, and, second, because the coal miners are constantly demanding an advance in wages.

The time is ripe for a general move on the part of the United States coal exporters. I believe there is a fine opening. The poorer qualities of steam coal sell here at from \$2.30 to \$2.50 per ton, and medium grades at from \$2.60 to \$3.00; furnace coal, from \$2.80 to \$3.00, and coke at from \$2.50 to \$2.80. These prices are at the mines; not even on cars.

This condition of the coal trade has led Auguste Petit, a leading coal merchant of Verviers, Belgium, with connections at Brussels and Antwerp, to investigate the feasibility of importing American coal. He thinks it can be profitably done, and after an interview with me last week he informed me he would sail for the United States about November 1, thoroughly equipped with the necessary information as to the needs here, and prepared to assume a reasonable share of the expense of introducing American coal into this part of Europe. He is desirous of corresponding with coal producers interested in the export trade.

BATTLESHIPS.

Battleships and armored cruisers of a displacement larger than ever before built by this country are projected by the Navy Department. Secretary Long has transmitted to Congress a description of two battleships and two armored cruisers in accordance with the provisions of the last naval appropriation.

Each battleship will have a maximum displacement at full load of 17,604 tons and each armored cruiser a maximum displacement of 15,959 tons. The battleships will be longer and have greater beam than any in the United States Navy. Each ship will have a length on its load water line of 450 feet and an extreme breadth on the local water line of seventy-two feet eight inches.

Regarding sheathing and coppering, the naval board expresses the opinion that, "It is inadvisable to sheath and copper the underwater bodies of armored vessels of large displacement." Eleven inches is the maximum thickness of armor made by the Krupp process, considered necessary or desirable for battleships; in the case of armored cruisers the maximum thickness has been reduced to six inches. As regards the form of turret the elliptical balanced type with inclined port plates is considered the best.

The board is of the opinion that the most suitable types of guns are those adopted for the ships under construction. It does not consider it expedient to equip battleships and armored cruisers with torpedo tubes. Woodwork should be reduced to a minimum. The type of propelling machinery should be twin screws, driven by engines of the vertical triple expansion type.

MAGNETIC OBSERVATIONS.

The Coast and Geodetic Survey of the United States has established a magnetic observatory at Sitka, Alaska, and is constructing another at Honolulu, Hawaii, to co-operate with the British and German governments in investigating problems of the magnetic forces and needle variations throughout the world. This is in connection with one German and two British expeditions for the south pole on plans long ago formulated. The co-operation of the government of the United States and of other governments was asked by Germany, and the movement is now well under way. So far as the preliminary work is concerned, it contemplates magnetic observations at fixed observatories throughout the world simultaneously with the actual scientific researches in the south polar regions. Both the American observatories will be ready to assume their part of the co-operation at the time designated in February next. The work of the expeditions is likely to occupy two or three years, and its value is largely dependent on the observations similarly and simultaneously made in different parts of the world. It is expected to determine the question whether all magnetic disturbances and phenomena are subject to a common and world-wide cause instead of being of a local character.

EXTERMINATING THE HERRING.

"At the present rate the herring are being lifted from the waters of Green Bay, the supply of the edible little fish will be well nigh exhausted in five years more," was the statement made by J. O. Lindquist, the veteran fish dealer, last week. "A vast amount of fish are being taken from Green Bay every year," said Mr. Lindquist, "but the fishermen are little counting the cost now. Fishing with nets is now carried on in the fall, winter and spring. The fish get no time to propagate and are being caught in the deepest, as well as the shallowest waters. A large number of big deep water herring, the greatest propagators, are being brought in. They are caught almost throughout the entire year, something not known before, and the number of fishermen is increasing. In former years there was no fishing done through the ice with nets, but it is now carried on vigorously every winter. This was the manner in which the white fish were exterminated from Green Bay and if the insatiable greed of the fishermen continues, as it certainly will, the herring will go the way of the whitefish. There certainly ought to be a longer closed season." In the foregoing significant statement Mr. Lindquist calls the attention of everyone interested in fishing on Green Bay to the dangers of the wholesale manner of the catch now. Green Bay is now one of the best fishing grounds on the Great Lakes, but if the present rate of catch continues, the fishermen will kill the goose that lays the golden egg for them. There certainly ought to be more stringent regulations and a longer closed season.

The Green Bay herring is now a famous fish and it is a great source of revenue for the entire Green Bay region.

LETTERS AT DETROIT MARINE POST OFFICE.

DECEMBER 4, 1901.

To get any of these letters, addresses or their authorized agents will apply at the general delivery window or write to the postmaster at Detroit, calling for "advertised" matter, giving the date of his list and paying one cent.

Advertised matter is previously held one week awaiting delivery. It is held two weeks before it goes to the Dead Letter Office at Washington, D. C.

Allen Oliver.	Sauber	Laughner W. F.-2
Bonner Marcus.	Tampa	Lennon Frank, F. Brown
Bondy Silas.	P. Chamberlin	Loughnay Abr.
Blaauvelt Jno. S.	Duncan	Morgan Robt., Saginaw
Basg Leo.	Racine	Jarten Jno., Troy
Balfer Mrs. O. C.		McDonald Donald
Bauer Harold.	Reis	McLarty A. J.,
Blaauvelt Clark,	133	McConoughev Geo..
Brown A. H.		McCombe Jno.
Barnett Ford		McPhee D. H., Ketcham
Cook Geo. W.		Norton Albert,
Christie J.		Nelson Geo.
Callahan Jno. H.	Ralston	Philip Jno. R., Fulton
Culeton Jno.	Sheldon	Packard M. W., J. Duncan
Calhoun Benj.—3,	Leighton	Phipps Guy E.
Cratz Gus.	H. J. Johnson	Post Sam. Uranus
Cumming Alex.	Kendall	Pitz Charles
Cullen Peter.		Roy Joseph
Connors Harry		Radford Wm.
English John, Capt.	Wilson	Stevenson Wm.
Flora W. F.	Fulton	Sterling Geo.-3, Tampa
Geneau Kid		Stewart Roy, Milwaukee
Hamilton John		Sancrante Alex.
Henry B. W. P.	Ketchum	Smith John
Hinckley P. W.	Vulcan	Stoddart Wm., Tampa
Heise Fred		Truesdale Henry, Shaw
Hartford Ed.	Ogemaw	West Geo. W.-4, Ketcham
Hamlin Alfred		Walsh J., Ogemaw
Hinkley Burton		Woods Robt., Donaldson
Hanson Claude		Watkins Benj.
Kitchen Geo.		Will Herman A.
Kelly Joe, Connemaugh		Willis Wm. H.
		F. B. DICKERSON, P. M.

THE MANUFACTURE OF WIRE ROPE.

The manufacture of wire rope is an industry of entirely modern growth, says the Coal and Iron Trades Review. It has developed during the past two or three decades from incon siderable dimensions to an industry of extensive and increasing commercial importance. While formerly hempen ropes and chains held an undisputed monopoly for all industrial purposes, metallic ropes, and more particularly those of steel wire, are now employed almost to the exclusion of the older material in connection with nearly all operations which present severe strains or have to withstand hard usage and excessive wear and tear.

For heavy haulage, traction, marine, and construction work, steel wire rope holds unquestioned supremacy, and as years have passed and requirements have become more drastic the conditions under which steel wire ropes are manufactured have been correspondingly improved, until they have attained a measure of industrial excellence which is in the highest degree meritorious.

DETROIT.

Special Correspondence to The Marine Record.

Henry Wineman, Jr., has bought the steamer Tampa and consort Aurora from E. D. Carter, of Erie. The vessels were turned over to the new owner at once. The price paid for both boats was \$125,000.

The D. & C. Line is sending out unique announcements of the close of navigation. The Cleveland run will be discontinued December 9. The cards show the D. & C. fleet anchored fast to a "hook" embedded in the ice.

The barge Sophia Minch which collided with the car ferry Lansdowne in the river several weeks ago, will be placed in dry dock at Algoma for repairs. The Minch was considerably damaged. She was bound for Houghton with a cargo of coal.

Some of the crew of the steamer Wetmore and her consorts Brunette and King, reached here on Tuesday and reported the loss of the vessels near Joeremorey, Georgian Bay, on Friday last, during a heavy gale and snow storm. No lives were lost but the vessels with their lumber cargoes are considered total losses.

The revenue cutter Fessenden has been placed in her winter berth near the foot of Eighteenth street. Captain J. B. Moore, who is in command of the cutter, has been assigned assistant inspector of the tenth and eleventh life saving districts during the coming winter, to fill the vacancy caused by the death of Captain J. H. Rogers.

The following meteorological observations are furnished by the office of the United States Weather Bureau, Detroit, for the week: Prevailing wind direction for the week, northwest; highest velocity, 33 southwest on November 29. Mean temperature for the week, 33; highest temperature, 58 degrees on December 1; lowest, 16 degrees on November 28.

The schooner Biwabic went aground on the west bank of the St. Clair ship canal on Monday, and sunk with 18 inches of water over her deck. She was bound up when she took a sheer and brought up against the bank. If she shifts and slides into the channel, traffic bound both ways will be blocked until she can be removed. At present, but one boat can pass her either way.

John H. Galwey, United States local inspector of boilers, has just returned from a 3,000-mile trip from Detroit to Newport News on the cargo steamer Hugoma, which was launched recently at Wyandotte for ocean service. The trip was made without mishap through the St. Lawrence river and a couple of heavy storms was also experienced in the Gulf of St. Lawrence and the Atlantic coast.

Now it is announced that Sir Christopher Furness, before he sailed for England this week, said, that he had made arrangements with the Clergue interests at Sault Ste. Marie for the building of an immense ship building plant at the junction of the Soo Canal and Lake Superior. Steel works are to be erected there at a cost of about \$10,000,000, and the raw material is to come from the coal and iron mines of Canada. This, of course, is a very unlikely story, but I send it on for what it is worth.

By a boiler explosion at the plant of the Penberthy Injector Co., on Tuesday of last week, about 26 men were killed and injured. The loss is put at \$180,000, the three-story building in which the boilers were located being completely destroyed. Fire followed the explosion and did great damage. This is one of the most regretable accidents which has occurred in Detroit for years. The Penberthy Injector Co. is one of the best firms in the State, employing the most skilled labor and kept their establishment up to the highest notch of efficiency at all times. The casualty is as yet unexplainable.

The Dominion Government Cruiser Petrel, in charge of Captain Dunn, arrived at Windsor last night and is awaiting the inspection of Captain Spain, commander of the fisheries protection service. The Petrel will then probably be ordered to go into winter quarters at Walkerville. "While I captured nearly double the number of nets of last season," said Capt. Dunn to-day, "poaching is decreasing every year. I got between three hundred and four hundred gill nets this season. It's a disgrace that Canadian fishermen are not allowed to fish for white fish in the Detroit River, when they can see the Americans hauling them in just across the center of the river. The lakes are being depleted and if we had free fishing like the Americans, there would soon be no fishing for either country. The governments of the United States and Canada should adopt the same fishery laws, and see that they are enforced."



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RELIABLE, SPEEDY.

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WHY TRUSCOTT BOATS EXCEL.

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ST. JOSEPH, MICH.

PROGRESS IN THE UNITED STATES.

The Shipping World, London, says: We take the following highly significant figures regarding the progress of the United States in its material industries from an interesting table in the Monthly Summary of Commerce and Finance. The figures relate to the decades 1870, 1880, 1890, and 1900, with the interpolation of those for 1895. For our purpose we give the totals for 1870 and 1900 only, with the percentages of increase or decrease based on the thirty years' interval. In regard to population, last year's total reads 76,303,387, or 98 per cent. more than thirty years ago. During the same period the salaries paid in public schools have increased by 240 per cent., the total for 1900 being £25,732,576. In thirty years the miles of railway in operation have risen from 52,922 to 190,833, or by 261 per cent., and the ton-miles of freight from 39,322,209,249 in 1880 to 126,991,703,110 in 1900, an increase equal to 223 per cent. in the twenty years, while the average freight per ton-mile has fallen 62 per cent. in the thirty years, an object lesson which our railway magnates might profitably take to heart. The tonnage of vessels passing through the Sault Ste. Marie Canal, which stood last year at 22,315,834 tons, shows an increase of 3,130 per cent. The product of wheat, corn, and cotton increased by 121, 92 and 228 per cent. respectively in the thirty years. The tonnage of American vessels engaged in the domestic trade has almost doubled in the period under notice, the total for 1870 being 2,729,707, and that for 1900, 4,338,145, equal to an increase of 59 per cent. On the other hand, the American tonnage engaged in foreign trade has dropped by 46 per cent., last year's figures reading only 826,691 tons against 1,516,800 tons in 1870.

But it is in its mineral resources that America has shown the most wonderful, and even now scarcely realizable advance. Thirty years ago the States mined 32,863,000 tons of coal, last year they had augmented this by no less than 626 per cent. In the same period her production of pig iron rose by the even greater ratio of 728 per cent., i.e., from 1,665,170 to 13,789,242 tons, while her steel production shows the truly terrific increase of 15,376 per cent., the 68,750 tons of 1870 having risen to 10,639,857 tons in 1900. After this it is not surprising to find that her imports of manufactures of iron and steel have fallen in value from £14,253,340 in 1880 to £4,095,760 last year, or that her exports of such have risen by 1,008 per cent. in the thirty years; the total of these reading, last year, at £54,388,720. After these figures we need only say that America's total exports have increased by 256 per cent., and her total imports by 95 per cent. during three decades, to show that our greatest and most potential rival in commerce lies to our west.

COAL COMPANY CONSOLIDATION.

It would be an easy matter to attach too much importance to the announcement that has just been made, to the effect that the powerful corporation named in the Commercial and Financial World, New York—the Fairmount Coal Company has secured the practical control of the stock, amounting to \$2,500,000, of the Northwestern Fuel Company. The Fairmount Coal Company recently bought all the property of the North Wisconsin Dock Company, a large coal handling company at West Superior.

The Fairmount Coal Company, which is capitalized at \$12,000,000, has recently been strengthening its position in a remarkable fashion. By virtue of the new arrangements just completed it and the Northwestern Fuel Company will permanently control a large percentage of lake coal tonnage, with an actual docking capacity of 2,500,000 tons annually. Mr. E. N. Saunders will remain as President of the Northwestern Fuel Company.

The New York office of the Fairmount Coal Company is at No. 1 Broadway, and the general offices are at Fairmount, W. Va. There are also offices in most of the principal cities throughout the United States.

This company owns and controls 5,800 individual cars, and it makes lake, tide-water and all rail shipments. It is one of the strongest, best equipped and best managed industrial organizations of the country, and is certain to make great profits for its fortunate stockholders.

STATEMENT OF THE VISIBLE SUPPLY OF GRAIN.

As compiled by George F. Stone, Secretary Chicago Board of Trade, November 30.

CITIES WHERE STORED.	WHEAT. Bushels.	CORN. Bushels.	OATS. Bushels.	RYE. Bushels.	BARLEY Bushels.
Buffalo.....	4,960,000	1,163,000	1,067,000	66,000	1,087,000
Chicago.....	6,570,000	5,677,000	919,000	1,077,000	20,000
Detroit.....	592,000	236,000	31,000	14,000	29,000
Duluth.....	6,235,000	478,000	57,000	387,000	222,000
Fort William, Ont.....	925,000	.....	.....	.....	.....
Milwaukee.....	219,000	95,000	86,000	58,000	145,000
Port Arthur, Ont.....	85,000	.....	.....	.....	.....
Toledo.....	471,000	426,000	907,000	293,000	9,000
Toronto.....	33,000	.....	1,000	.....	35,000
On Canals.....	133,000	17,000	207,000	37,000	195,000
On Lakes.....	5,465,000	879,000	576,000	25,000	878,000
On Miss. River.....	.....	.....	.....	.....	.....
Grand Total.....	52,396,000	11,227,000	6,603,000	2,554,000	3,007,000
Corresponding Date,					
1900.....	62,179,000	9,442,000	11,319,000	1,325,000	3,418,000
Increase for week.....	3,484,000	.....	111,000	.....	437,000
Decrease " .....	.....	237,000	.....	64,000	.....

While the stock of grain at lake ports only is here given, the total shows the figures for the entire country except the Pacific Slope.

COMMANDER Richardson Clover, U. S. N., Naval Attaché, U. S. Embassy in London, made an address at a recent banquet of the Institute of Marine Engineers in that city, which has received the cordial approval of British naval officers. Commander Clover dealt with the amalgamation of the executive and engineer branches of the American Naval Service, and The Army and Navy Gazette, of London, in commanding his opinions, observes that he has indicated the manner in which the same problem, which is pressing for settlement in the British Navy, should be solved. To the question, "How has the new system in the American Navy worked thus far?" Commander Clover answers that there are a number of the older officers in both branches who see no good in it. But the younger officers who are less affected with the prejudices inherent with the old system heartily approve of it. "It is not yet time," he contends, "to state whether it will be a failure or a success; but should it prove a failure, which I believe will not be the case, it will be on account of old prejudices and want of a united effort to make it a success." Commenting on this statement, our London contemporary remarks: "His explanation of how it became possible to bring about the change which has taken place in the United States Navy is most lucid, and gives ground for hoping that by similar steps we also may find salvation. It is most important that the authorities should realize, and we believe they do realize, the difficulties and the dangers of the situation."

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from 80 to 365 days and nights without attention, and can be seen a distance of six miles.

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160 Broadway, New York City.

TREASURY DECISIONS.

TONNAGE TAX—ADMEASUREMENT.

Tonnage tax will not be levied on sheltered spaces above the upper deck of a vessel which is under cover, but open to the weather—that is, not inclosed.

TREASURY DEPARTMENT, BUREAU OF NAVIGATION,
WASHINGTON, D. C., November 22, 1901.

SIR: The Bureau has received your letter of July 29, containing a further report, in reply to the Bureau's letter of instructions of July 2, in the matter of the protest of the Atlantic Transport Co., dated April 18, against your action in making an addition of 1,531 tons to the net tonnage of the steamer Minneapolis and imposing tonnage taxes amounting to \$91.86 on this additional tonnage. The grounds for the protest are the same as in the case of the Bovic, in which you were instructed yesterday.

The diagram and report of the surveyor transmitted by you show ten hatches in the structure in which cattle are carried. Eight of these have high combings and are the usual hatches of vessels. At the two remaining hatches, one forward and one aft, which have low combings, the deck is broken, but not completely from one side of the ship to the other, as in the case of the Bovic. The steel deck for a width of about eight or ten feet is continued on either side, and the spaces between the inner edges of this continuation and the two hatches are covered with planks at sea, as in the Bovic. In each side of the vessel in the structure in which the cattle are carried, at the two places abreast the two hatches described are gaps 4.7 feet high and 5.5 feet wide, closed at sea with side doors.

The Minneapolis was built in 1900, and is the latest type of vessel designed for the North Atlantic cattle trade. The differences in the construction of the Minneapolis and the Bovic are a further evolution of the temporary wooden houses originally used to shelter cattle on the upper deck. The structure in question, accordingly, will be regarded not as an upper deck, but as "sheltered space above the upper deck, which is under cover."

While the cattle deck on the Minneapolis is less exposed than on the Bovic, the Bureau holds that it is to be regarded as "open to the weather—that is, not inclosed," it being understood that the two hatches in question are in fact never closed and battened down, and that cargo, other than cargo generally classed as deck cargo, such as cattle, horses, chemicals, oil in barrels, etc., is not in fact carried in this space. When, in the Minneapolis or vessels of similar construction, these conditions are not complied with, the spaces in question will be considered as not open to the weather—that is, inclosed, and you will act accordingly.

You may forward a certified statement with a view to a refund of the amount of the tax overpaid under this decision.

Respectfully,

E. T. CHAMBERLAIN, Commissioner,

COLLECTOR OF CUSTOMS, New York, N. Y.

Steamship in Narrow Channel.—A large steamship entering Boston harbor accompanied by a tug, owing to her draught, was obliged to pass through a narrow channel, some 2,000 to 2,500 feet in length, in which she could not well maneuver. The weather was fair, with a light wind, and there were a number of sailing vessels anchored to the south of the channel. When partly through, a schooner was seen coming from among the anchored vessels on a course which crossed the channel. The steamer's engines were reversed, and the tug was sent ahead, but did not succeed in getting the schooner out of the way, and, owing to the lightness of the wind, she was drifted by the ebb tide against the bow of the steamer and injured. Held that, conceding that the steamer was the privileged vessel, owing to the narrowness of the channel, the claiming of such peculiar privilege imposed on her the duty, under the circumstances, of taking the precaution of sending the tug ahead to give warning before she entered the channel, and that because of the failure to take such precaution, as well as of improper steering, and other errors in navigation, she was liable for the damage to the schooner. The Devonian, 110 Fed. Rep. (U. S.) 588.

SUN'S AMPLITUDES.

The following approximate amplitudes of the Sun's rising or setting will be given each week in this column during the season of navigation. A second bearing may be taken by compass at sunset, by reversing the east bearing given for the nearest latitude, as the change in declination for a few hours makes but a slight difference in the true bearing of the sun's setting. The bearing may be taken when the sun's center is on the horizon, rising or setting. The elements which may be obtained by taking these amplitudes are the quantities known as local attraction, variation and deviation, or the total difference between compass and true, or geographical bearings.

LAKE ERIE AND S. END LAKE MICHIGAN, LAT. 42° N.

Date. Amplitude. Bearing P'ts. Bearing Comp.
Dec. 6....E. 31° S. = S. 5½ E. = S. E. by E. ¼ E.

Dec. 12....E. 32° S. = S. 5½ E. = S. E. by E. ½ E.

**LAKE ONTARIO, S. END HURON AND CENTRAL PORTION
LAKE MICHIGAN, LAT. 44° N.**

Date. Amplitude. Bearing P'ts. Bearing Comp.

Dec. 6....E. 32° S. = S. 5½ E. = S. E. by E. ½ E.

Dec. 12....E. 33° S. = S. 5 E. = S. E. by E.

N. END LAKES HURON AND MICHIGAN, LAT. 46° N.

Date. Amplitude. Bearing P'ts. Bearing Comp.

Dec. 6....E. 33° S. = S. 5 E. = S. E. by E.

Dec. 12....E. 34° S. = S. 5 E. = S. E. by E.

LAKE SUPERIOR, LAT. 48° N.

Date. Amplitude. Bearing P'ts. Bearing Comp.

Dec. 6....E. 35° S. = S. 4½ E. = S. E. ½ E.

Dec. 12....E. 36° S. = S. 4¾ E. = S. E. ¾ E.

With a compass correct magnetic, the difference between the observed and true bearing or amplitude will be the variation for the locality. Should there be any deviation on the course the vessel is heading at the time of taking the bearing, the difference between the observed and the true amplitude after the variation is applied will be the amount of deviation on that course. If the correct magnetic bearing is to the right of the compass bearing, the deviation is easterly, if to the left, the deviation is westerly.

HOT WATER PACKING.

After exhaustive tests covering a period of two years, the H. W. Johns Manufacturing Company has placed on the market a packing to be used on plungers and rods of pumps, delivering water at a temperature above 180 degrees F. In every test which has been made, this packing lasted six times as long as any other packing subjected to the same conditions.

The Kearsarge Asbesto-Metallic Packings, produced by this company are meeting with ever widening favor, and the success of their entire line of packings offered for high pressure and high speed engines is sufficient guarantee of the value of any new packing which they may offer.

ANOTHER new form of submarine boat, intended particularly for an attempt to reach the North Pole, has been designed by a German engineer, M. Amchutz-Kampfe, and is now under construction at Wilhelmshaven. The vessel is calculated to steam three knots an hour and to be able to remain submerged for fifteen hours. Arctic explorers say that it is rare to find a tract of ice greater than three miles in length without an opening, but should this boat travel even fifty miles underneath the surface without discovering a way out, she will be provided with apparatus for breaking through the ice. Her crew will number five persons.

MAJOR KINGMAN, DISTRICT ENGINEER.

The Ohio rivers and harbors district is now in charge of Major Dan C. Kingman, Corps of Engineers, U. S. A. Major Kingman is a man of broad experience in engineering work.

He was graduated from West Point in 1875, spent three years in the engineers corps and then returned to West Point as an instructor in engineering work. He was then sent to the West, under General Crook. He was assigned the task of mapping out the railways and the bridges through Yellowstone Park, in which work he was engaged for four summers. The system which he originated in the park at that time has since been enlarged and worked upon by the engineers' force.

From there he was sent to New Orleans to take charge of the Mississippi river from Vicksburg to its mouth. During his stay there came one of the big floods. It was his duty to save the levees, if possible, and prevent as much inundation as he might. The levees were very low then, and the river rose to an extraordinary height, being twelve feet above the levees in places. It was held in check almost entirely by bags of earth, which the engineers and their crews watched for a period of six weeks. Major Kingman was successful, for which the State Legislature of Louisiana gave him a vote of thanks.

From there Major Kingman was sent to Oswego, on Lake Ontario, and there distinguished himself by a suggestion which he made to Congress. It was that a ship canal might be made from the lakes to the ocean by means of the Oswego river. This suggestion has been ringing in the ears of marine men ever since, and has given rise to a dozen projects. After he had been five years in Oswego he was sent to Chattanooga, where he was given control of 2,400 miles of the Tennessee river.

When he was ordered to Cleveland he was building a waterlock with the greatest lift in the world.

THE GERMAN NAVY.

Emperor William, of Germany, participated in the debate of the Society of Naval Engineers last week on the subject of placing heavy guns on battleships, and its effect upon their design and construction. His Majesty referred to the influence of military requirements upon the development of ship construction and artillery, and pointed out how the aim of Germany had always been to allow the opinion of the officers who had to navigate ships to have as much weight and influence as possible on the shipbuilder and the constructors.

Germany was also the first nation able to place a captain still on the active list at the head of the Construction Bureau. He believed that the types of vessels now being launched in German yards represented the very best needed for the purposes of the country or that could be demanded from the splendid constructors and magnificent yards of Germany. The meeting was held in the Technical School at Charlottenburg. Admiral Tirpitz, secretary of the admiralty, was present.

The emperor, illustrating his contention that tactical requirements influenced the construction of ships of war, said the time of the galleys had seen great development in the matter of boat fire, and that the galleys were superior in this respect to later battleships. He instanced the battle of Lepanto as the greatest wherein galleys had been engaged, and said Don Juan of Austria had brought his galleys into action, in half-moon formation, and had destroyed the enemy's fleet by the superiority of their bow fire.

SUBMARINE BOATS—FLYING MACHINES.

Rear-Admiral Melville, who a few months ago expressed grave doubts as to the practical value of the submarine boat, contributes an article to the December number of the North American Review, entitled "The Engineer and the Problem of Aerial Navigation," in which he cautions the public against the opinion that any flying machine can be constructed that will prove of commercial or military importance. The Admiral enumerates the conditions which oppose such a consummation, and he strongly deprecates partial success for experiments in aerial navigation, since, were that achieved, companies would spring up like mushrooms, and thousands of people would lose the hoarded savings of years. In connection with such experiments, the Admiral holds, the engineer owes it as a duty to the public to speak out as to their probable results, and he concludes:

"There is one engineer whose opinion at the present hour, after a consideration of some of the more important physical and mechanical facts involved, and after noting, in connection with the conclusion to which such consideration has led, certain social conditions, is that there is no basis for the ardent hopes and positive statements made as to the safe and successful use of the dirigible balloon or flying machine or both, for commercial transportation or as weapons of war, and that, therefore, it would be wrong whether willful or unknowing to lead the people and perhaps governments at this time to believe the contrary; and he therefore, asked to be permitted to put his opinion thus before the readers of this Review.

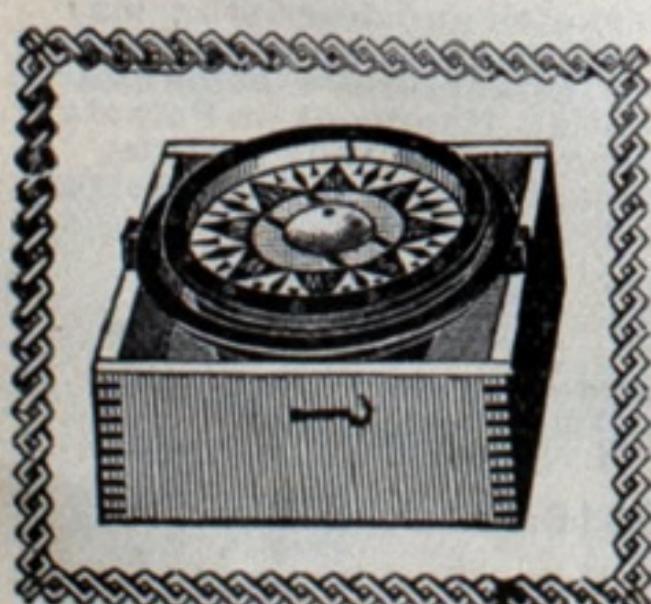
"It has been always the function of science to clip the wings of fancy; and, as it did so, it has revealed a 'fairy land' more wonderful than man could conceive, and has enabled him to attain a material comfort and happiness undreamt of. It is, therefore, not unreasonable to suppose that if in the future physical discoveries actually show this now undetermined art to possess no commercial utility or military value, and to involve too much difficulty and danger as a sport to be universally indulged in, science will have revealed a glimpse of practical possibilities which, in their realization, shall surpass all present dreams."

At the rate the sand from the beach of Lake Michigan is drifting into Goshen Lake, near Saginaw, it will not be many years before that little body of water will have actually disappeared. Early settlers familiar with the lake and its surroundings estimate that the sand has encroached upon its surface to the distance of at least 1,000 feet.



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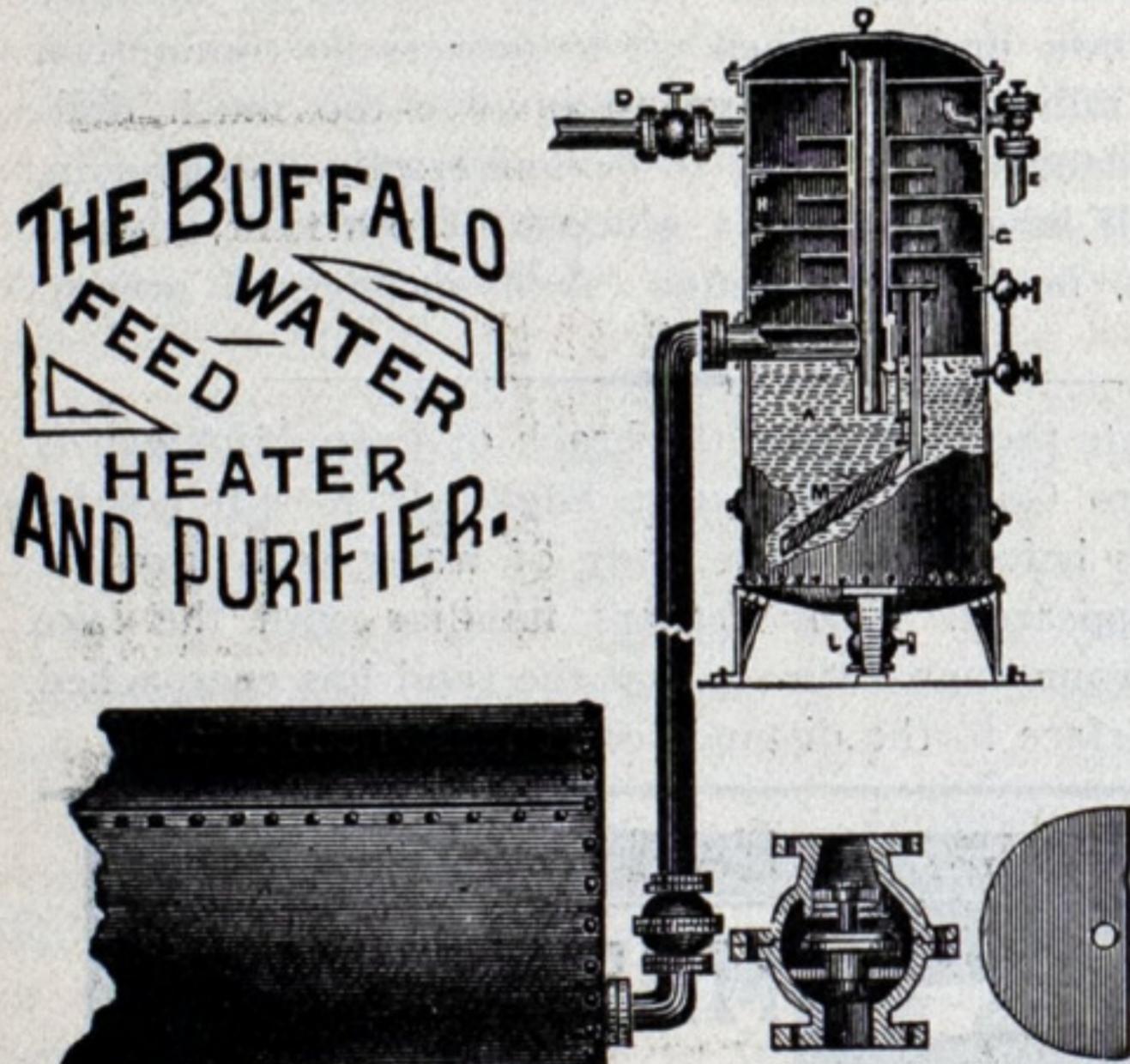
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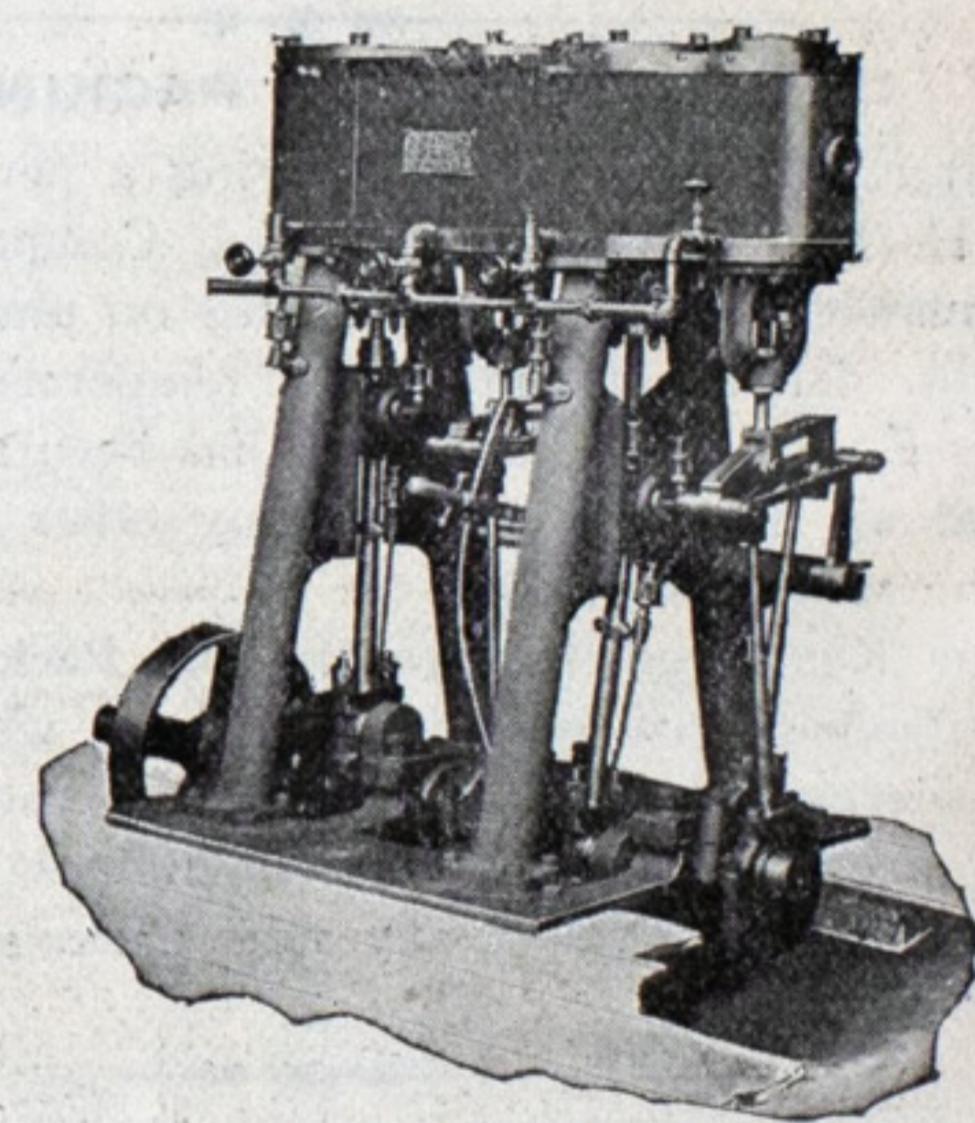
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THE SKY IN DECEMBER.

Astronomical data for December, 1901, furnished the MARINE RECORD by the Washburn observatory:

Mercury is a morning star, but the planet is approaching the sun and is unfavorably situated for observation. The four bright planets are seen in the southwestern sky in the early evening. Of these Mars is very low and inconspicuous, while Venus is the highest and most brilliant. The planet has passed well to the eastward of Jupiter and Saturn, with which it formed so interesting a group last month, and on December 4th reaches its greatest elongation east from the sun. One half of the disc will then be illuminated and a diminishing portion thereafter; but the planet will continue to increase in brightness as its orbital motion brings it nearer the earth. Jupiter also has passed to the eastward of Saturn, but the planets will remain a close pair through the month.

The times of sunrise and sunset at Milwaukee for the month are as follows:

	SUNRISE.	SUNSET.
December 1.....	7:03.....	4:18
December 11.....	7:13.....	4:16
December 21.....	7:20.....	4:19
December 31.....	7:24.....	4:26

The times of the moon's phases are:

Third quarter.....	December 2.....	3:50 p. m.
New Moon.....	December 10.....	8:53 p. m.
First quarter.....	December 18.....	2:35 p. m.
Full moon.....	December 25.....	6:16 a. m.

The principal fixed stars visible during the month in the evening hours are: To the west: Vega and Altair. To the east: Aldebaran, the Pleiades, the bright stars of the constellation Orion, Sirius, Procyon, Capella, Castor and Pollux.

REPORTED BY THE LOOKOUT.

Supervising Inspector Westcott, of the Steamboat Inspection Service, stationed at Detroit, has ordered that all boilers on steamboats be fitted with fusible plugs, made of good Banca tin, in accordance with the United States statutes, and that the boilers be fitted at the time of the inspection.

In a report to the Hydrographic Office of the Navy Department, Henry H. Neligan, third officer of the steamer Irada, vouches for the existence of the sea serpent, one of which, 100 feet long, he was able to see distinctly. This on the 26th of October, in latitude 27 degrees 26 minutes north, longitude 90 degrees 18 minutes west. "The head had a blunt, square nose and was ejecting water to the height of two or three feet from its nostrils. The animal or fish had three distinct sets of fins and a tail lying across like a porpoise. On its back was a series of humps like a camel. It was heading about east (true) and moving slowly."

It has been announced in Philadelphia within the last few days, that the Standard Oil Co. has closed important contracts for the building of several large oil carriers for the trans-Atlantic trade. The Cramp Ship & Engine Building Co. has been awarded one of the contracts, and the others go to ship builders at Richmond, Va., and elsewhere. The vessels are to be 350 feet in length and will have a minimum capacity of 1,500,000 gallons each.

Captain Dunn has a grievance with American vesselmen, who, he says, have wantonly destroyed a Dominion Government light, which he removed from the southeast shoal and placed it at the end of the cut at the mouth of the Detroit river. He says that it was placed there at the solicitation of Capt. George P. McKay, secretary of the Lake Carriers' Association, as a turning buoy. Since October 21 the light has been destroyed four times.

On October 26, Dr. Otto Nordenskjold's ship, the Antarctic, sailed from Falmouth, England, on a voyage of exploration of the Antarctic regions. The expedition will occupy eighteen months, and as it is practically the first to that particular region, the results are awaited with great interest.

STEAMERS FOR SALE.

The undersigned offers for sale by tender the passenger steamers Niagara and Canada, lying at the York St. wharf, Toronto.

The Niagara is an iron hull, screw steamer, built at Glasgow, Scotland; registered tonnage, 225.34 tons; length, 159 ft.; breadth 21.1 ft.; depth, 10.4 ft.; draft, 7 ft. Tenders for the purchase of the Niagara will be received by the undersigned at 97-98 Freehold Bldg., Toronto, till December 20, 1901.

The Canada is a wooden hull, screw steamer, built at Wallaceburg, Ont., 1874. Registered tonnage, 208.55 tons, length, 123.2 ft.; breadth, 24.1 ft.; depth, 6.7 ft.; draft, 9 ft. Tenders for the purchase of the Canada will be received by the undersigned at the said address till February 1st, 1902.

A large amount of money has lately been spent in the repair and equipment of these vessels. For further particulars, apply to the undersigned.

Purchasers will be required to pay all the purchase money forthwith after acceptance of tender or tenders. These boats are assets of the Toronto Navigation Co., limited, insolvent, and must be sold. A. C. Neff, assignee, 97-99 Freehold Bld., Toronto, Ont., dated, November 25th, 1901.

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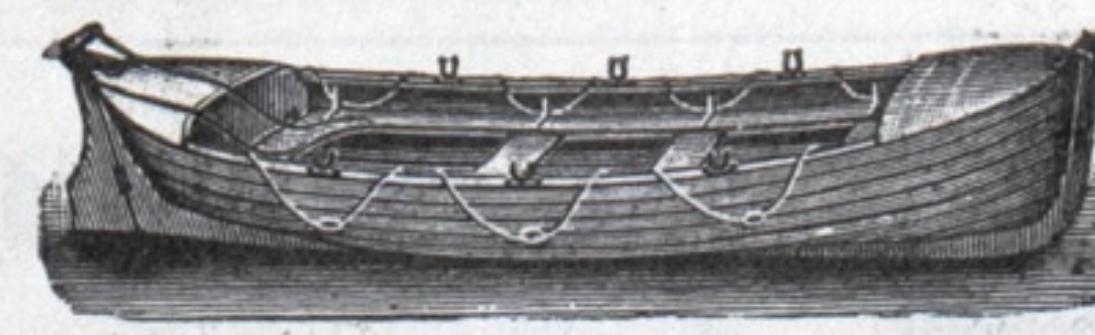
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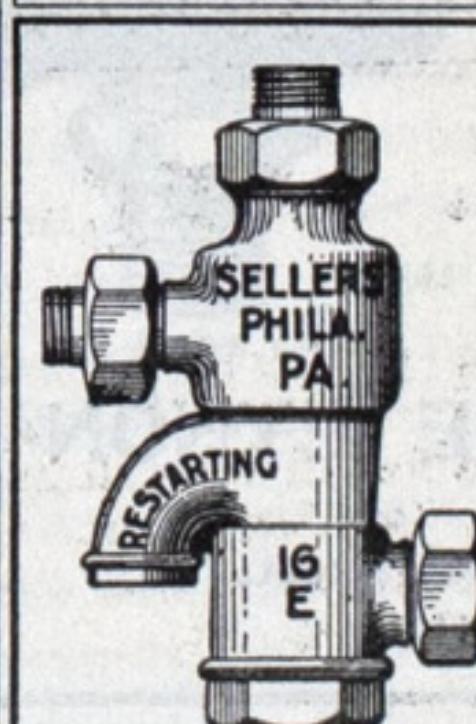
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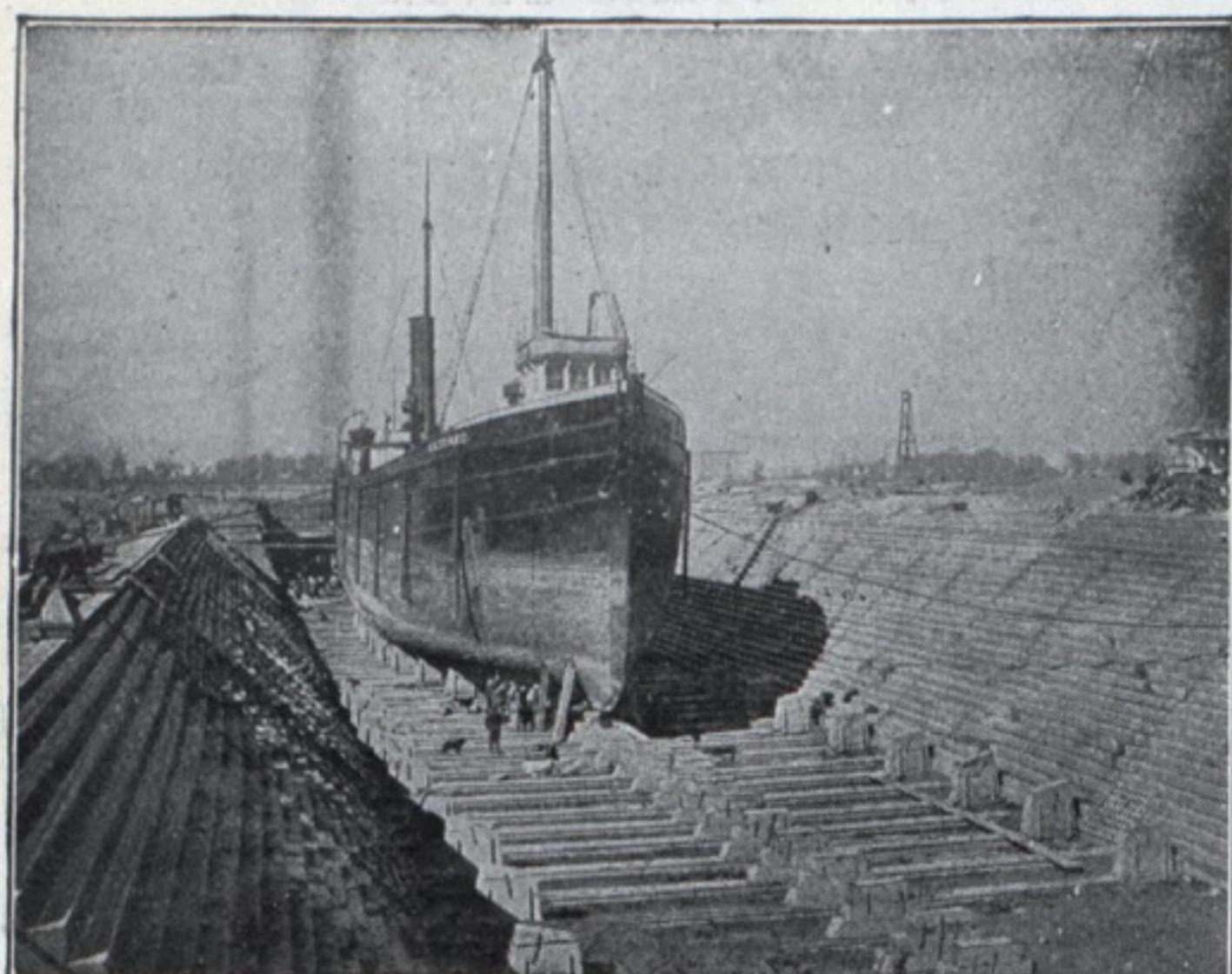
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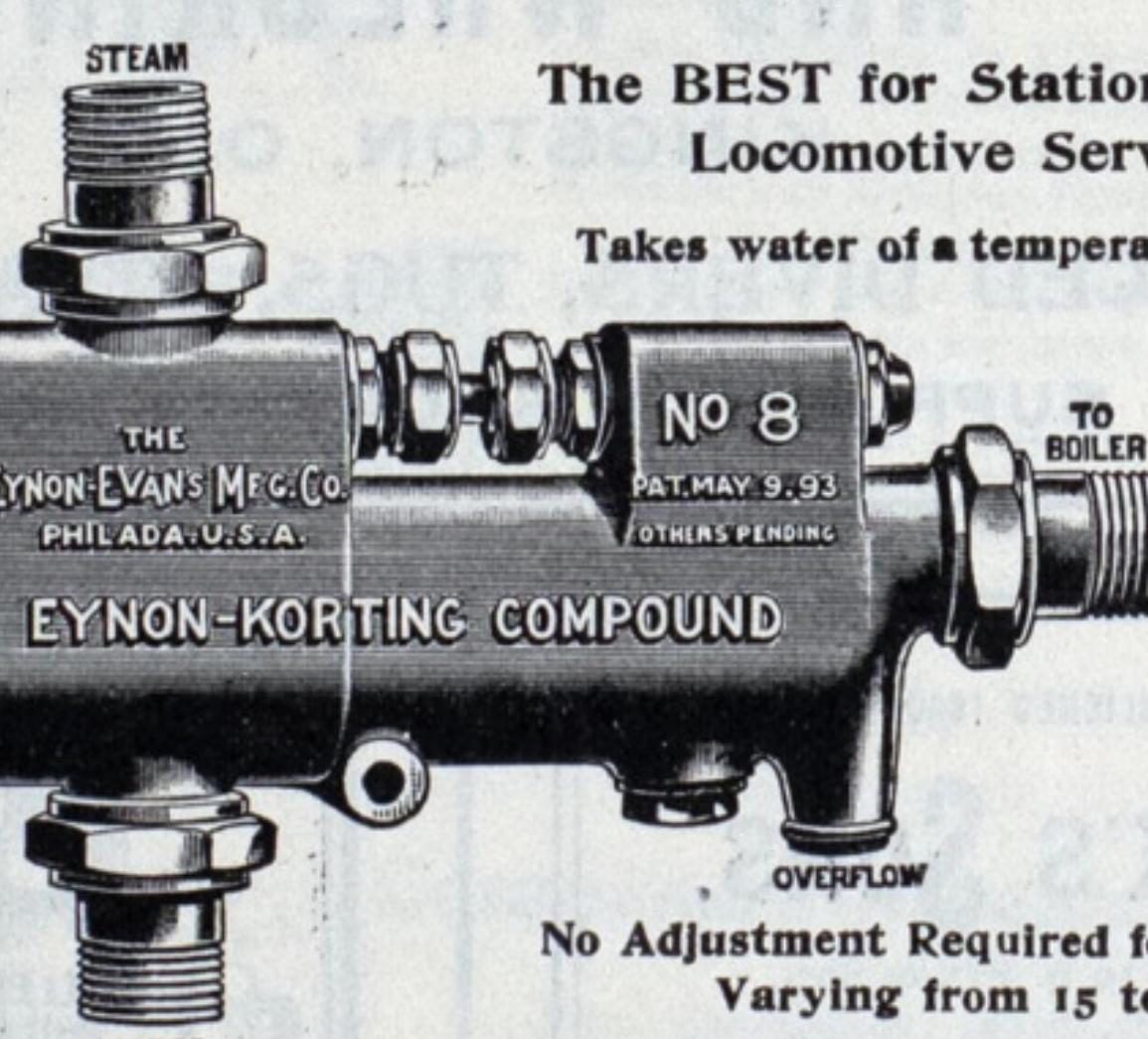
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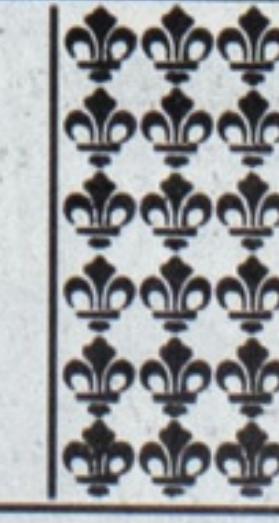
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